FACULTY OF COMPUTER SCIENCE AND INFORMATION TECHNOLOGY UNIVERSITY OF MALAYA

Emotional, Mental and Physical Health Problems Analysis System (EMPHASIS)

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This project is submitted to the Faculty of Science and Information Technology, University of Malaya,
in partial fulfillment of the requirement of the Bachelor of Computer Science

Abstract

Emotional, Mental and Physical Health Problems Analysis System (EMPHASIS) is my final year thesis title. This project documentation is an exercise submitted to Faculty Computer Science and Information Technology, University of Malaya.

EMPHASIS is design to evaluate the emotional, mental and physical health problems among the students of Faculty Computer Science and Information Technology and recommend appropriate treatments for the students. EMPHASIS divided to six modules, there are survey form module, survey result module, generate report module, generate statistic module, students record module and treatments module. EMPHASIS is only display in English version.

The Unified Process has been chosen as the methodology to develop the EMPHASIS. The technique such as questionnaire, discussion with supervisor and search from internet are used to gather important information.

The major development tools that used to develop EMPHASIS are Windows XP Professional, Microsoft Visual Basic.NET, Microsoft SQL Server, ADO.NET, Macromedia Flash MX and Adobe Photoshop 7.0.

As a conclusion, EMPHASIS is needed to identify the level of emotional, mental and physical health problems and suggest suitable treatments to overcome these problems in order to help the students to excel academically.

Acknowledgement

First and foremost, I would like to extend my heartfelt gratitude to my supervisor, Dr Ow Siew Hock for taking me under her supervision and giving me precious guidance, instruction, opinion and thoughtful contribution throughout the thesis. She is willing to guide me patiently whenever I face any problems or gave me some useful ideas in developing the system.

My deepest gratitude also goes to Puan Raja Jamilah Raja Yusof as my project moderator in first semester 2004/2005 and Puan Nazean Jomhari as my project moderator in second semester 2004/2005 for sparing their precious time to be my moderator.

I also would like to express my sincere gratitude to all my fellow course mates for their willingness to share their ideas, knowledge and resources with me throughout the project.

Lastly, I would like to express my gratitude to my family members for their support and understanding me throughout the project.

Thank you.

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List of Abbreviations

Sentences	Abbreviations
Emotional, Mental and Physical Health Problems Analysis System	EMPHASIS
Rational Unified Process	RUP
Application Program Interface	API
Graphic User Interface	GUI
Operating System	OS
Java Server Pages	JSP
Active Server Page.Net	ASP.NET
Microsoft Visual Basic.NET	VB.NET
Extensible Markup Language	XML
Data Transformations	DTS
Unified Process	UP
Unified Modeling Language	UML

Chapter 1 Introduction

1.1 Project Overview

Today, the advancement in technology has made our daily life and routines moving at a much faster pace. Individuals are expected to perform more tasks to do things faster and more efficiently within a given limited time. This results in stress and depression among those who are unable to cope with this situation. Thus there is an obvious rise in suicide rate and increase in mental illness cases throughout the world.

In Australia, there are over 2,000 commit suicides each year. The main cause is depression or bipolar disorder. Most of the suiciders are young people of age ranging from 15 to 30 years old who are affected by mental illness. The factors that contribute to their suicide are depression, psychosis and dugs or alcohols that cause suicidal behaviour. Hence, it is important to identify and give treatment to those who planned to commit suicide. Having positive emotional, feelings and mental thinking is one way to heal from illnesses and stress. Contrary, someone who has a negative emotion, feelings and mental thinking would bring poisoning to the organism as negative emotion such as anger, spite, envy, jealous, and fear could make the endocrine system accumulate poisoning in the blood. Anxiety, depression and doubt can also cause poisoning of the blood. Passive and length negative emotion are even more dangerous for health than active, sudden and momentary negative emotions (betterhealthchannel.com, 2000).

In Malaysia, the impact of negative emotion, feelings and mental thinking among the school children and university students have brought about unpleasant and unwanted

incidents and consequences to the students. Examples of these incidents include fighting and killing among the school children in sekolah agama at Seremban (wolverinemalaya.com, 2005) and murder due to a break up relationship (nextlevel.com.my, 2000.). Hence, this research project was thus initiated to investigate the impacts of emotional, mental and physical health towards the academic performance of the undergraduate students of Faculty Computer Science of University of Malaya.

1.2 Problem Statements

The impacts of emotional, mental and physical health towards the academic performance of the students have brought about the concerns of the teachers, parents and Ministry of Education.

In Malaysia, there is still not yet available a system that can be used to analyze the emotional, mental and physical health problems that the students are experiencing, and suggest suitable treatments such as exercises and seeking advice from psychiatrist.

Obviously, it can be identified easily whether a student is having physical health problem by looking at his health conditions. (e.g. having fever, score threat, walking using crutched, etc) the physical health problems could induce different levels of impact to the academic performance of the student who suffers physical health problem. For example, a student who is immobile due to backbone injury could not perform academically well compare to a student who suffers from asthma.

Similarly, students who have emotional and mental problems would not excel in their academic study. As there are no such systems available in Malaysia to assess the levels of these health problems, this project is thus initiated.

1.3 Project Objective

The objective is to develop a system to analyze the emotional, mental and physical health problems and suggest appropriate treatments for the students.

This system aims to achieve the following:

- To analyze and identify the level of emotional, mental and physical health problems.
- To recommend suitable exercises for students to overcome their emotional, mental and physical health problems.
- To help students to maintain emotional, mental and physical health.
- To help students to attain high self-esteem and confidence in academic study.

1.4 Project Scopes

The project scopes are:

- Investigation on the impacts of emotional, mental and physical health problem towards academic study established based on Vera Peiffer's assessment methodology.
- An investigation is conducted on the final year students of Faculty of Computer Science and Information Technology.

1.5 Expected Outcome

The expected outcome of this project is:

- A system that could help students to identify the levels of emotional, mental and physical health problems and suggest appropriate treatments to overcome the problems in order to help the students to excel academically.

1.6 Project Schedule

Each task or each project is given an estimate duration to accomplish. The project schedule is an important to help identify the sequences of tasks and the estimated durations that each task or process are required to complete.

Below is the Gantt chart that shows the project schedule for the development of EMPHASIS.

ID	Task Name	Start	Finish	Duration
1	Project Definition	6/25/2004	8/19/2004	56d
2	Conduct Literature Review	7/16/2004	8/25/2004	41d
3	Determine Research Methodology	7/23/2004	9/9/2004	49d
4	System Analysis	8/8/2004	10/18/2004	72d
5	System Design	7/28/2004	12/13/2004	139d
6	System Implimentation	9/12/2004	12/22/2004	102d
7	System Testing	11/1/2004	2/3/2005	95d
8	Documentation	6/25/2004	3/1/2005	250d

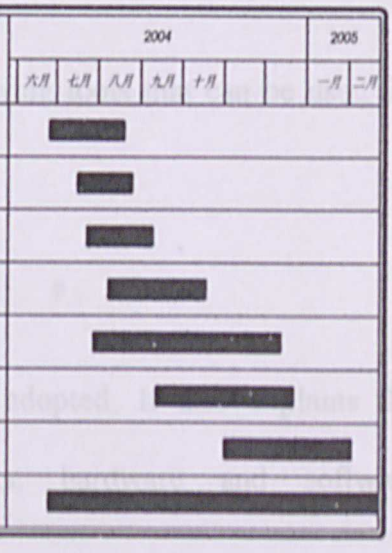


Figure 1.1: Project Schedule

1.7 Report Layout

This project consists of eight chapters that are explained briefly shown below:

Chapter 1: Introduction

This chapter provides an introduction about the project. It includes the project objective, statements of problem, project scopes, expected outcome and the project schedule.

Chapter 2: Literature Review

This chapter emphasis on the topics researched. It includes reviews on the existing systems and the research topics. Reviews on the features, capabilities of the system architecture and the development tools that are appropriate for the development of the system are also presented.

Chapter 3: Research Methodology

This chapter highlights on hardware, software and authoring tools that can be used for development.

Chapter 4: System Analysis

This chapter elaborates on the research methodology adopted. It also explains the functional requirements, non-functional requirements, hardware and software requirement of the system.

Chapter 5: System Design

This chapter describes the system architecture design, system functionality design, database design and user interface design.

Chapter 6: System Implementation

This Chapter consists of an explanation of implementation and coding written process and the description of system design into the executive system.

Chapter 7: System Testing

This chapter describes the process to detect the defect of the system to ensure the system meets the user requirement and produce a quality system.

Chapter 8: System Evaluation

This chapter included the description about the system strength, limitation, performance, description about current enhancement done and future enhancement that can be done.

Chapter 2 Literature Review

2.1 Introduction to Literature Review

A literature review for this project is very important as they might have a similar characteristic in some existing system that can helps developer to discover some of the existing features. Through studies on the existing system, the developer can have a better understanding of online survey in current system and the existing of the problem domain. Within this literature, the developer will learn the existing system and modify or enhance it into more powerful feature.

However, the main of literature review is to identify the shortages and strengths of current existing survey system that the developer can built the system that can overcomes the demerits of the current system.

Besides, the literature review also focus on several development tools such as available programming technologies, databases, multimedia tools that can helps to gain a knowledge of their strengths and limitation for developer to choose the right tools for the project.

2.2 Overview of Survey Forms

The survey can be conducted by manual file systems or web-based systems.

Manual File Systems

Nowadays, there are still many analyzers using the manual file system to manage their survey information about the physiologies or healthy problem. This system is not advisable as it involves huge amount of paper documents. Data recorded as hand-written will be a cumbersome procedures to make changes. It also time consuming because spend more time to receive feedback from people and waste money. Besides that, the document files are easily misplaced and even got lost. However, with manual file survey system, all the information data that kept in file folders will inconsistence and redundancy especially the human mistake in incorrect input.

Web-based Systems

Many surveys are conduct by web-based system. The user can access the system in any location and anytime. The advantage of this system is easier to access the data but the disadvantage is when a network failure occurred, the system can not be accessed and all the information that the user key in before will lost and need to reenter the data. This will cause the lost of productivities and time.

2.3 Review Existing Survey Forms

Web-based systems

a. Case Study 1

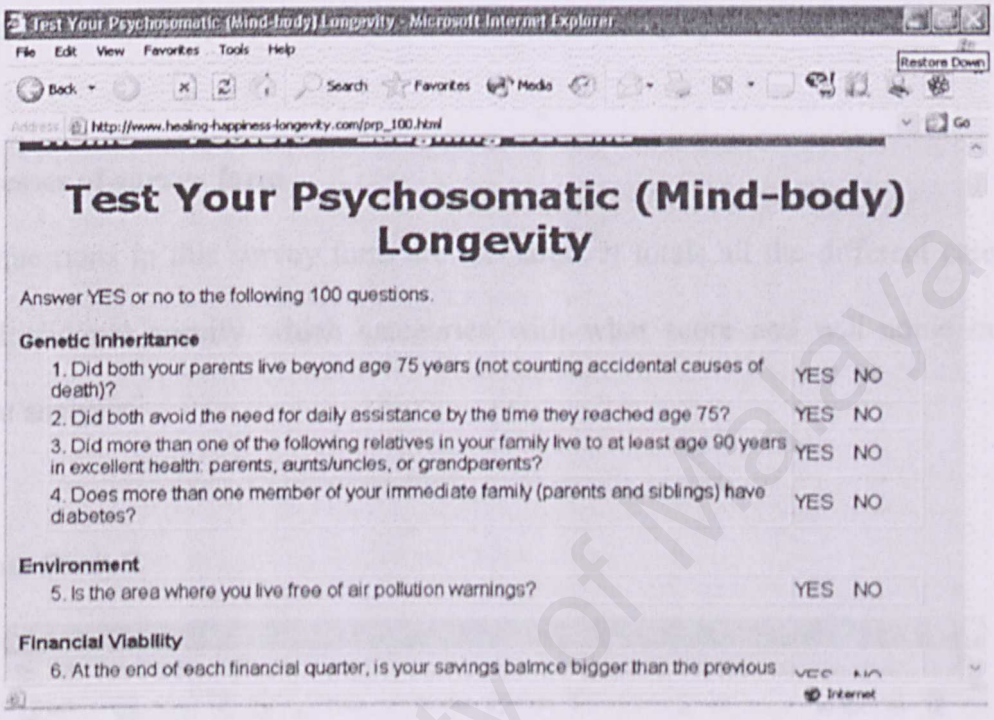


Figure 2.1: Case Study 1

Introduction

(http://www.healing-happiness-longevity.com/prp_100.html)

This survey is online survey and it used to test psychosomatic (Mind-body) longevity. This survey have 100 questions and it consists of many different categories, there are genetic inheritance, environment, financial viability, physical fitness, diet, healthy lifestyle, stress-sensitivity and relaxation skills, mental fitness & vigour optimism, positive self image, independence & self-responsibility, sense of humor & cheerfulness, resilient outlook, sense of purpose, family, friends & relationships longevity expectation. This survey also provide scoring and analysis of the resulting score (healing-happiness-longevity.com).

Weaknesses of the system

The weakness of this system is the user need to calculate their score manually. This will take time consuming and miscalculation of score. Therefore, it results incorrectness of analysis. Besides, the system is not attractive and lack of graphic, images or animation.

Weaknesses of survey form

Scope questions in this survey form are too large. It totals all the different categories' score. It did not specify which categories with what score and will come out with different analysis.

b. Case Study 2

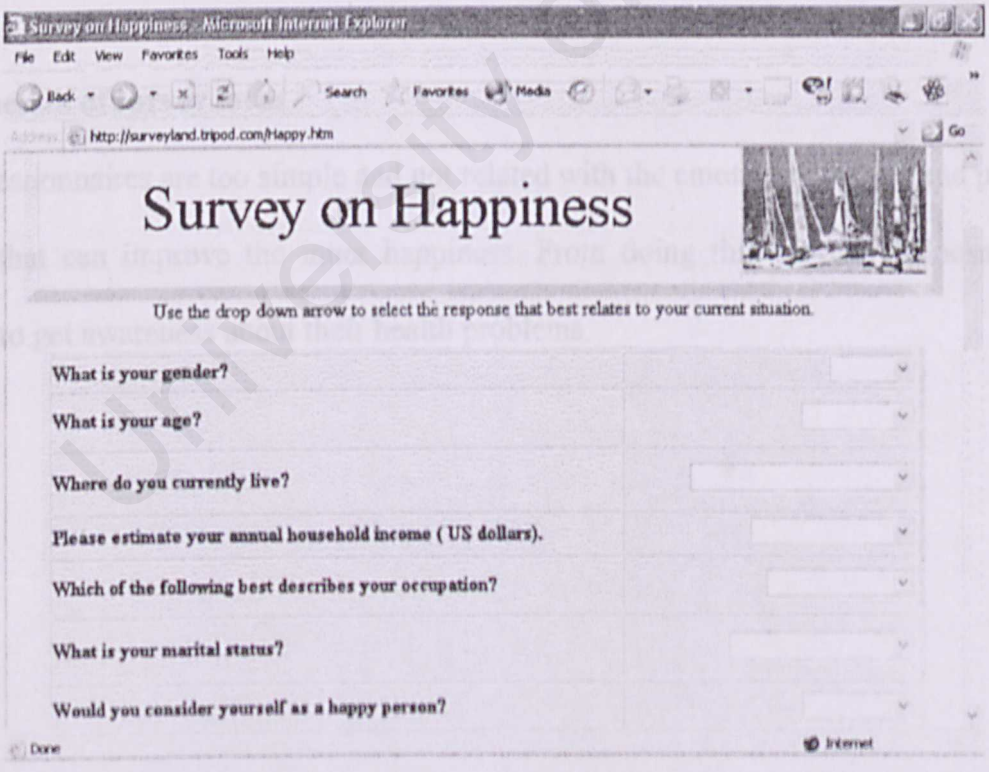


Figure 2.2: Case Study 2

Introduction

http://surveyland.tripod.com/Happy.htm is a website that consist survey questionnaire created by Perseus SurveySolutions. This system is survey on happiness. This survey describes your views towards Happiness. This system comes out with simple and short questions (surveyland.tripod.com, 2001).

Weaknesses of the system

One of the weakness of the system is it will not function when failure network occurred because it is web-based survey. Besides, the system is inconsistent. When click the submit button, it cannot display the result page in some condition. This system is not attractive and lack of graphics, images or animations.

Weaknesses of survey form

The questionnaires are too simple and not related with the emotional, mental and physical health that can improve the inner happiness. From doing this survey, it doesn't help people to get awareness about their health problems.

c. Case study 3

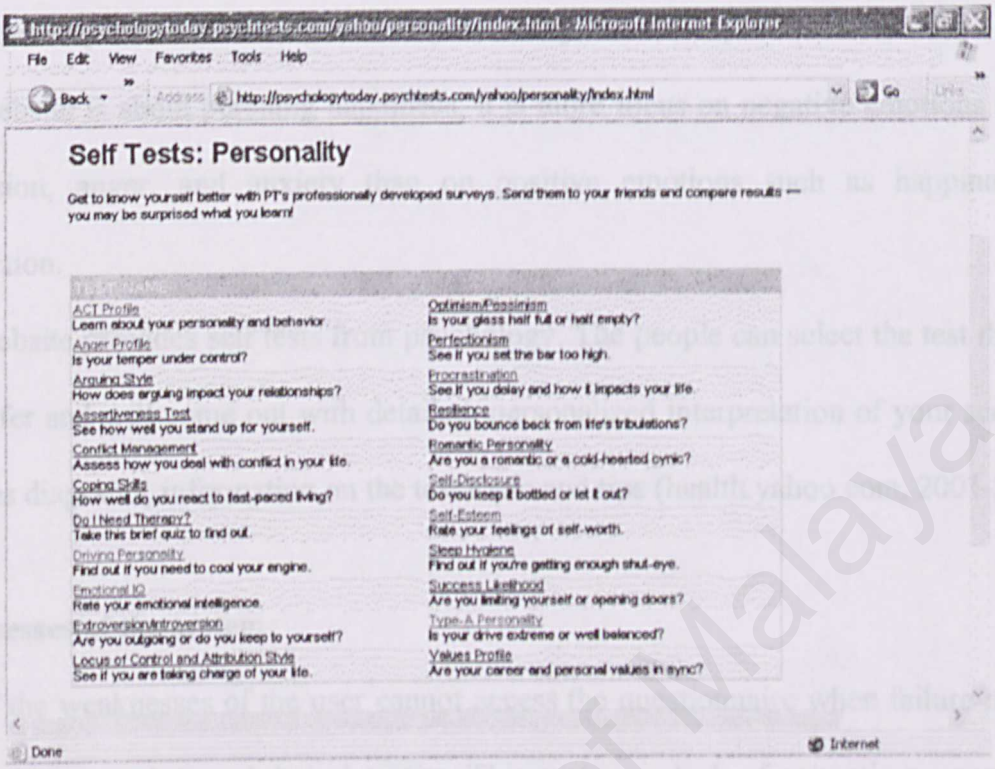


Figure 2.3: Case Study 3

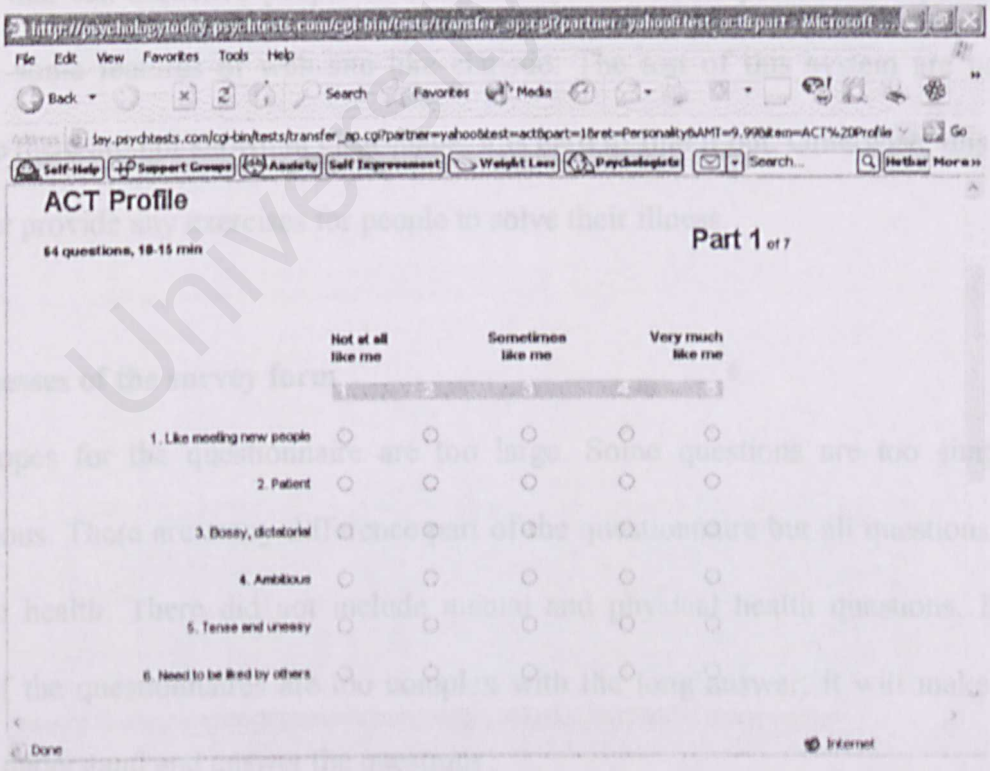


Figure 2.4: Case Study 3

Introduction

(http://health.yahoo.com/health/centers/personality/1648.html)

This website is about pursuing happiness, it is more focus on negative emotions such as depression, anger, and anxiety than on positive emotions such as happiness and satisfaction.

This website provides self tests from psychology. The people can select the test that they are prefer and will come out with detailed, personalized interpretation of your score that includes diagrams, information on the test topic and tips (health.yahoo.com, 2001-2004).

Weaknesses of the system

One of the weaknesses of the user cannot access the questionnaire when failure network occurred because it is web-based survey. This system is lack of animations, graphics or images that can attractive people in using the system. Some personal computer cannot support some features of web site like statistic. The test of this system are not clear because there are not shown in clear place, it is hard to find it out. Otherwise, this system does not provide any exercises for people to solve their illness.

Weaknesses of the survey form

The scopes for the questionnaire are too large. Some questions are too simple and ambiguous. There are many difference part of the questionnaire but all questions are for emotion health. There did not include mental and physical health questions. Besides, some of the questionnaires are too complex with the long answer; it will make people hard to understand and answer the questions.

d. Case study 4

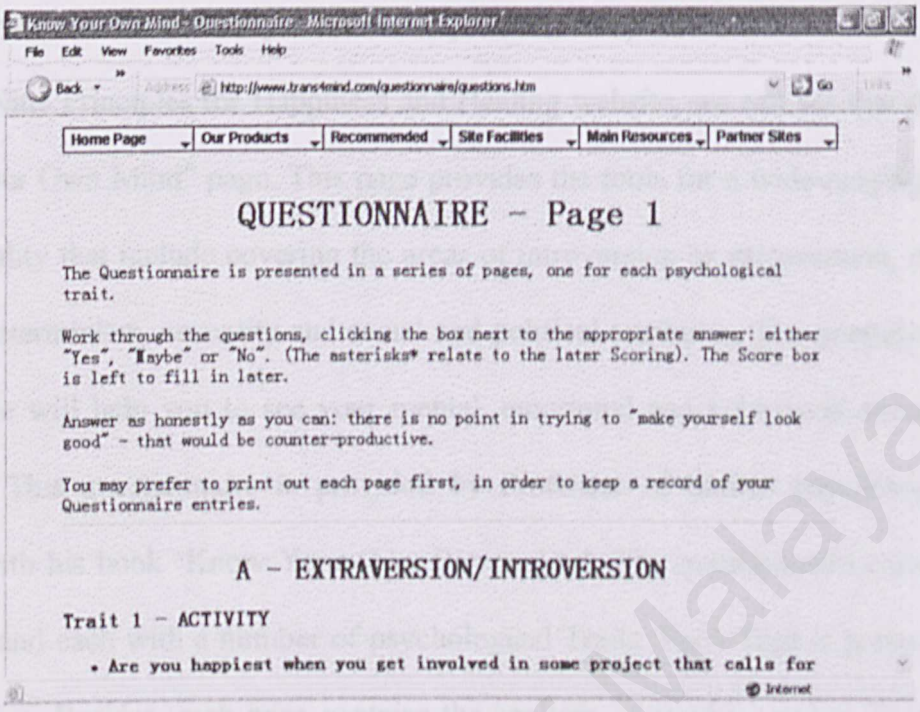


Figure 2.5: Case Study 4

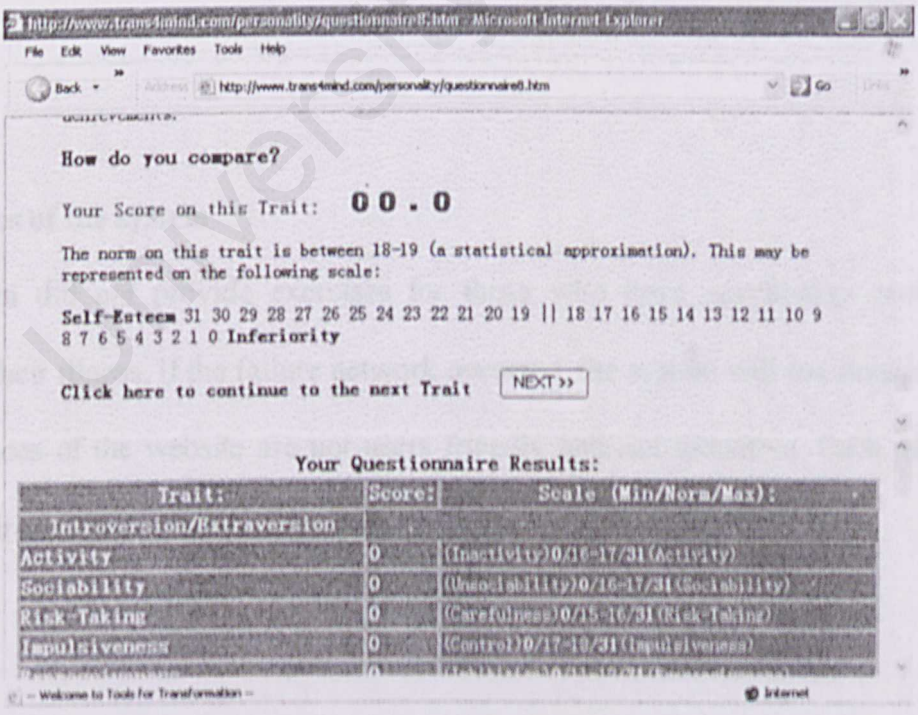


Figure 2.6: Case Study 4

Introduction:

(http://www.trans4mind.com/questionnaire/questions.htm)

From the Nine Principles for Happiness and Healing website, we can see that display of "Know Your Own Mind" page. This page provides the tools for a wide-ranging analysis for personality that include covering the areas of introversion or extroversion, emotional stability, determinism, sexuality and social and political attributes. The questionnaires of this website will help you to see your mental, emotional and behavioral strengths and weakness. This questionnaire is provided by Professor of human psychology, Hans Eysenck with his book 'Know Your Own Personality'. The questionnaire consists of 4 categories and each with a number of psychological Traits. Each Trait is presented on a separate page. Besides, each page contains the analysis of resulting score. This website provide 2 version of questionnaire, there are use a manual-scoring version of the questionnaire and automatically-scoring version of the questionnaire (trans4mind.com, 1972).

Weaknesses of the system

This system did not provide exercises for those who have psychology problems to overcome their illness. If the failure network occurred, the system will not function.

The interfaces of the website are not users friendly and not attractive. Each part of the questionnaire is too much and no graphic or images are providing on the page.

Weaknesses of survey form

Some of the questionnaires are not suitable for undergraduate students because most of the questions are ask based on social and politically or working areas. The scopes for the questionnaire are too large. It is more appropriate for working people.

Manual File System

e. Case Study 5

Stress has been on the increase from year to year. Our lives have changed irrevocably. The advancement in technology has made our daily life and routines moving much faster pace. At the same time, people expected a higher standard of living than before. The people are work hard and work long hours. This results stress problem. Survey form created by Beverly B. Palmer, a Ph.D from California State University, Dominguez Hills. (Refer Appendix II) is evaluated about the stressed among the people. Stressed is a part of emotional health problem. This survey consists 2 parts; there are 'Are You Stressed?', and 'what are You Doing to Handling Stress?' This survey makes us more understand about stressed and how to overcome the stressed. You will know how to handling your stressed.

Why use Vera Peiffer's assessment methodology in EMPHASIS?

The survey questions that I used to evaluate the students performance of emotional, mental and physical health problems is based on the Vera Peiffer's book "Inner Happiness". Vera Peiffer is a qualified analyst/hypnotherapist and health kinesiologist. The statements consist of emotional, mental and physical health problems that usually

happened to human. The provided questions help us more understand about characteristic behaviour and the experiences that have been gone through. It also offers simple and effective treatments based on what health problems you have. We can keep on going to do the question statements and follow the treatment that the book given, it will help us to overcome our health problems and become happiness.

I'm more preferred to use the question statements belong to Vera Peiffer as my survey question. It is because there are easy to understand and consist of emotional, mental and physical health (Refer Appendix I).

2.4 Technology Review

2.4.1 Development Model

Software development model is a description of software process which is presented from a particular perspective. The software development process is a methodology used in developed the computer software. There are the software developments:

2.4.1.1Waterfall Model

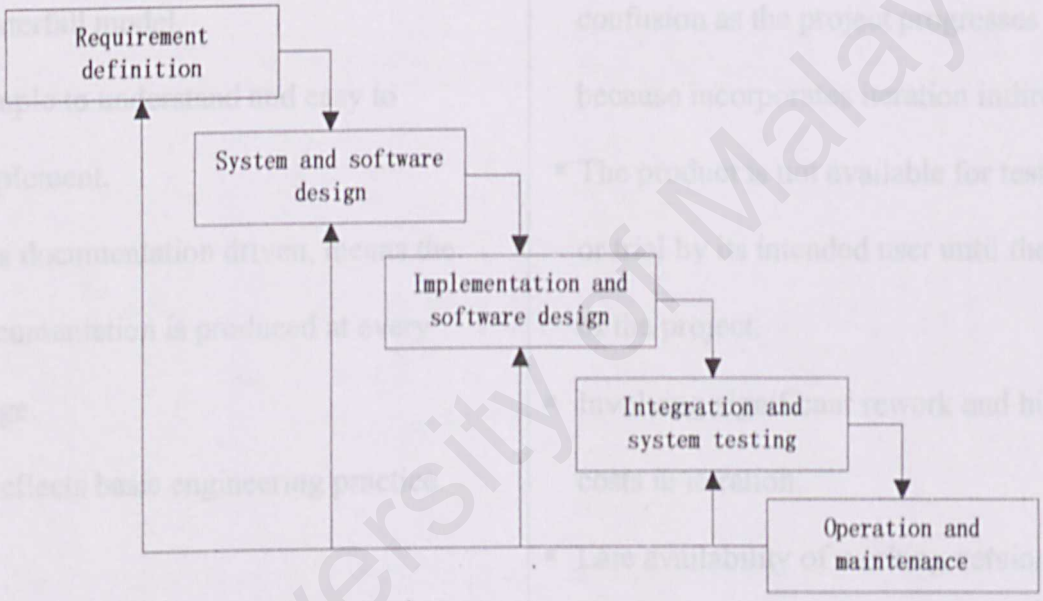


Figure 2.7: Waterfall Model

In the waterfall approach, the entire project is planned out before work begins. In waterfall model, each phase ends with a verification or test activity to ensure that the objectives of each phase are satisfied. The product goes through each phase sequentially and produces improving baseline or intermediate products. Once the baseline is achieved, it is put under formal change control process. Usually, waterfall model is used when problem domain and user requirements are well understood, the solution has been clearly

determined and the risk of change is small. The development phases used in Waterfall approach are Requirement definition, System and software design, Implementation and unit testing, Integration and system testing, and Operation and maintenance.

Table 2.1: Pros and Cons for Waterfall Model

Pros	Cons
▪ Testing in inherent to every phase of the Waterfall model. ▪ Simple to understand and easy to implement. ▪ It is documentation driven, means the documentation is produced at every stage. ▪ It reflects basic engineering practice.	▪ Changes may cause considerable confusion as the project progresses because incorporates iteration indirectly. ▪ The product is not available for testing or trial by its intended user until the end of the project. ▪ Involving significant rework and high costs in iteration. ▪ Late availability of working version.

2.4.1.2 V Model

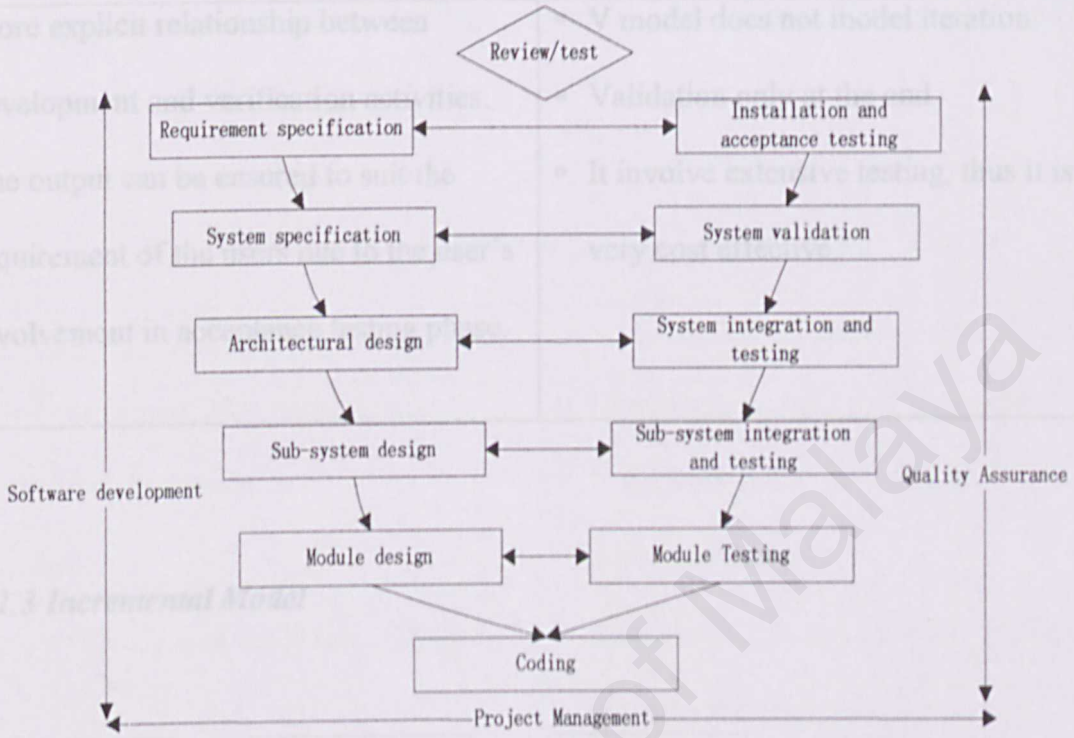


Figure 2.8: V Model

V model is a variation of the waterfall modal that demonstrates how the testing activities are related to analysis and design. In V model, with analysis and design on the left hand - side and the testing and maintenance the system is on the right hand – side. Each step on the right-hand side is forms the basic of testing its equivalent step on the left hand-side. V-shaped model does not run into the problem that the software is impossible to be tested because system test, integration test, and unit test are planned ahead.

Table 2.2: Pros and Cons for V Model

Pros	Cons
▪ More explicit relationship between development and verification activities. ▪ The output can be ensured to suit the requirement of the users due to the user's involvement in acceptance testing phase.	▪ V model does not model iteration. ▪ Validation only at the end. ▪ It involve extensive testing, thus it is not very cost effective.

2.4.1.3 Incremental Model

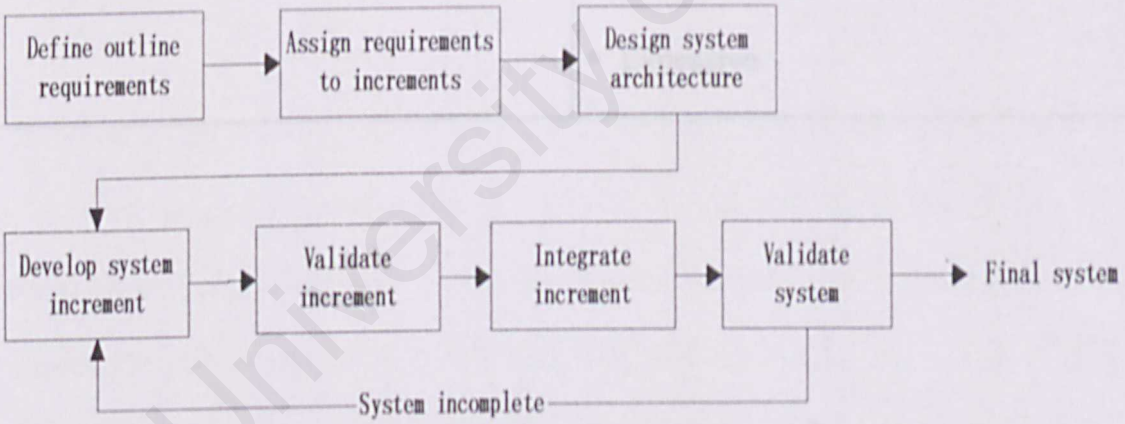


Figure 2.9: Incremental Model

In incremental development model, software development process is broken down into a series of increments which are developed and delivered in turn depends on it priority. Once an increment is completed and deliverable, customers can put in into service and experiment with the system to help them clarify their requirements for later increments.

As new increments are completed, they are integrated with the existing increments so that the system functionality improves with each delivered increment. There is also a lower risk of overall project failure as the highest priority services are delivered first and later increments are integrated with them.

Table 2.3: Pros and Cons for Incremental Model

Pros	Cons
▪ Good use of available resources. ▪ No need to maintenance. ▪ Flexible. ▪ Lower risk all over the project failure.	▪ Degenerate to built and fix model. ▪ Extra time spent on testing and documentation. ▪ Some problems are difficult to split up into increments. ▪ Expensive.

2.4.1.4 Spiral Model

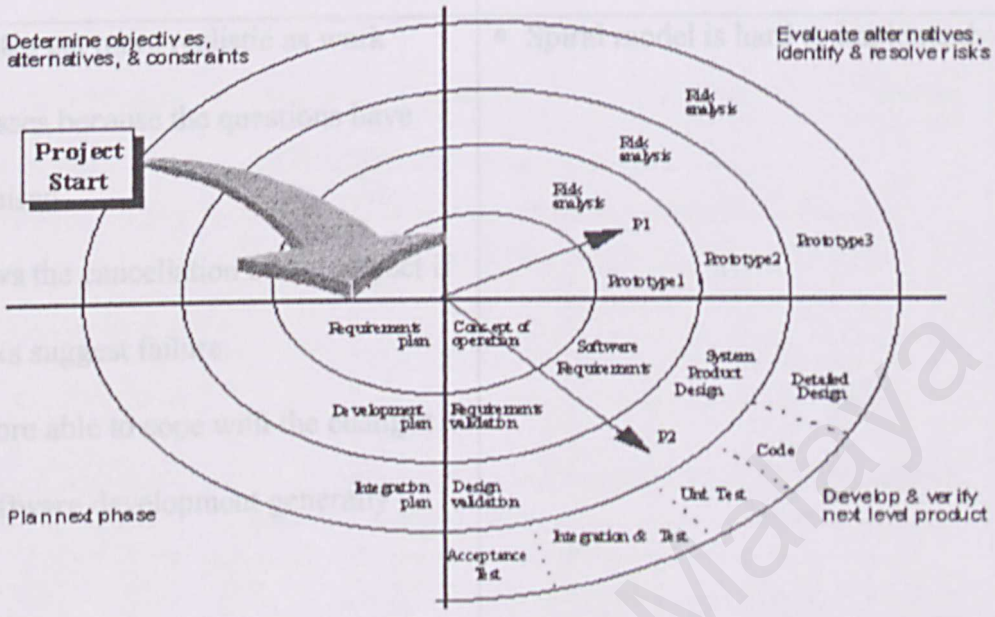


Figure 2.10: Spiral Model

The Spiral model is more suitable for software project development model is more suited to software projects. Spiral model is an iterative approach defined by Barry Boehm (1988). Each iterative delivers the incremental functionality that builds on the previous iteration. The issues can be explore at early stages to minimizing the impact of problem by developed the project in iterative. We can see that each loop in the spiral model is represents a phase of the software development process. Each loop is split into four sectors:

1. Determine objectives, alternatives and constraints.
2. Evaluate alternatives, identity and resolve risk.
3. Develop and verify next level product
4. Plan next phase

Table 2.4: Pros and Cons for Spiral Model

Pros	Cons
▪ Estimates get more realistic as work progresses because the questions have been raised. ▪ It allows the cancellation of the project if the risks suggest failure. ▪ It is more able to cope with the changes that software development generally entails.	▪ Spiral model is hard to implement.

2.4.1.5 Rational Unified Process (RUP)

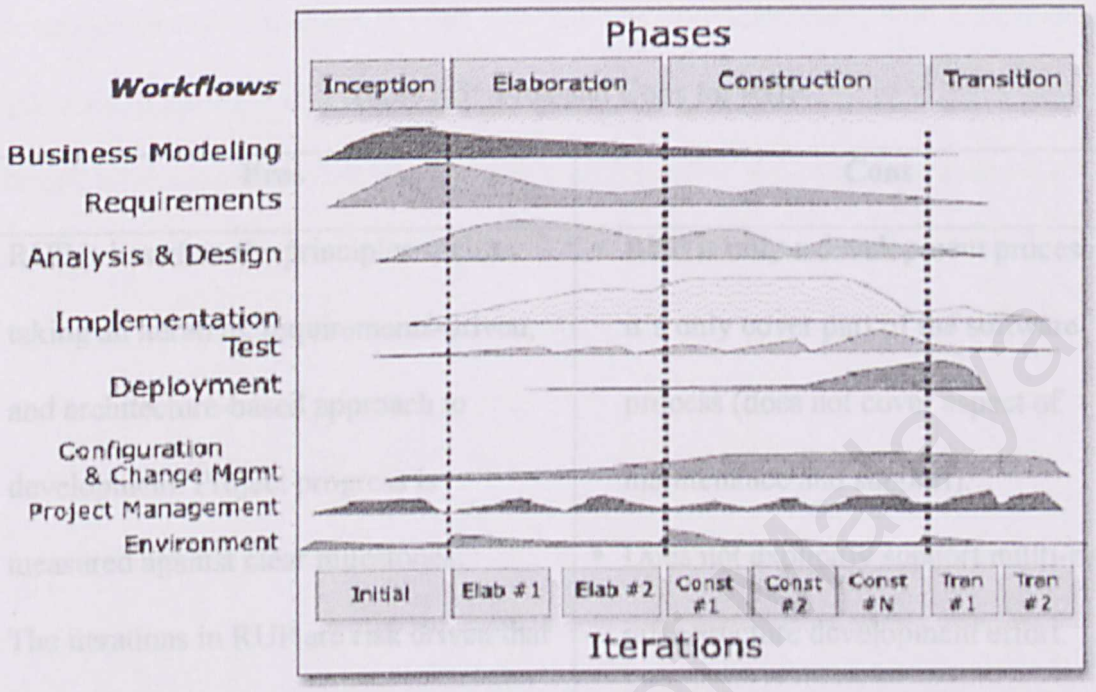


Figure 2.11: Rational Unified Process

RUP is an incremental process whereby the overall project is broken down into phases and iteration. The RUP has two dimensions. The horizontal axis represents time and shows four sequential phases of the process where iterations are included in each phase. The four phases are as follow:

1. Inception - Focus on understanding the scope of the project.
2. Elaboration – The architecture as well as the requirements of the software being built must be understood by the end of this phase.
3. Construction – The software must be constructed in this phase.
4. Transition – The software must be rolled out to customers during this phase.

The vertical dimension represents core process workflows, which group activities iteratively.

Table 2.5: Pros and Cons for RUP

Pros	Cons
▪ RUP is based on the principles such as taking an iterative, requirements-driven, and architecture-based approach to development. Project progress is measured against clear milestones. ▪ The iterations in RUP are risk driven that oriented toward mitigating risk. ▪ High level ad well documentation.	▪ RUP is only a development process and it's only cover part of the software process (does not cover aspect of maintenance and support). ▪ Does not explicitly support multi-project infrastructure development effort. ▪ Does not have the complete tools to automate every aspect of the software process. ▪ Weak in metrics management, reuse management, people management and testing.

2.4.2 Application Platform

Application platform or operating system is a main control program of the computer that can schedules task, manages storage, and handles communication with peripherals. The application platform enables user to make used of the application program by requesting through an Application Program Interface (API). With the operating system, user can directly interact through a command language or Graphic User Interface (GUI).

The most popular application platforms are:

2.4.2.1 UNIX

The UNIX operating system is developing at AT&T Bell Laboratory. But now it become very prominent at universities and research labs all over the world. The UNIX are offer several command interpreters or shells. It function is manage the hardware and executing of application separately.

Table 2.6: Pros and Cons for UNIX

Pros	Cons
▪ The programs execute mush faster. ▪ It can run on many computers. ▪ Have short command syntax. ▪ One file system, no devices. ▪ Free software available. ▪ Easy data, display, and peripheral access over the Network. ▪ Open system for total user control. ▪ Have a ability to combine functions and commands. ▪ High scalability. ▪ Strong parallel processing. ▪ Small system and applications memory and CPU usage. ▪ Applications written in C run faster and perform better. ▪ Less prone to memory leaks. ▪ Strong OS security. ▪ Easier to manage OS and database.	▪ Case sensitive. ▪ Non-sensible syntax. ▪ Little or no hardware restrictions.

2.4.2.2 Linux

Linux is an open source desktop operating system that used for a wide variety of purposes including networking, software development, new usability enhancements and end-user platform that is flexible and simple to use.

Table 2.7: Pros and Cons for LINUX

Pros	Cons
▪ It's almost free to relatively inexpensive. ▪ Source code is included. ▪ Bugs are fixed quickly. ▪ More stable than other modern operating system. ▪ Truly multi-user and multi-tasking. ▪ Make office work simple with commercial-grade applications. ▪ Have internet connection built in.	▪ Linux is hard to install, learn and use. ▪ Lacks of multimedia and video tools. ▪ Lacks a number of GUI setting panels.

2.4.2.3 Windows XP Professional

Windows XP Professional is Microsoft newest and is the best operating system for all size of businesses and user who demand the higher computing power.

Table 2.8: Pros and Cons for Windows XP Professional

Pros	Cons
▪ More reliable, easily recover from system problems. ▪ A feature called Remote Assistance enables user to have a friend or IT professional that is also running Windows XP remotely control user's computer to demonstrate a process or help solve a problem. ▪ Encrypting File System provides a high level of protection of with a randomly generated key. ▪ Windows Messenger provides an easy way to communicate and collaborate in real time on user's computer. ▪ Easy to use due to its intuitive, task-based design. ▪ A separate password-protected account can be set up foe user with different access levels. ▪ It includes simple wizards for setting up a home network, and it automatically	▪ There have some software and hardware that won't operate under XP, at least without updated patches or drivers. ▪ Sharing XP with more than one machine in the house is not acceptable. ▪ User needs to reactivate XP if a serious upgrade of PC's internal components is undertake due to Microsoft uses a complicated calculation to tag XP to a specific machine.

recognized speedy cable modem internet services.	

2.4.3 Programming Language

2.4.3.1 Java Server Page (JSP)

Java Server Pages (JSP) technology is based is a part of Sun's Java 2 Enterprise Edition (J2EE) JavaBeans. JSP provides an easy and powerful way to built web pages with dynamically. It is created using HTML such as tags and scriptlets written in Java. JSP supports the same modularity, reusability, platform-independence and access to Java APIs that Java programming supports.

Table 2.9: Pros and Cons for JSP

Pros	Cons
▪ Easy and convenient to use. ▪ JSP technology is Write Once Run Anywhere. ▪ JSP pages can be moved easily across platforms, and across web servers, without any changes. ▪ Separate the static presentation templates from dynamic content by encapsulating it within external JavaBeans components.	▪ JSP files often utilize JavaBeans components and this can introduce particular security risks ▪ JSP documentation requires an excessively broad knowledge of other Internet technologies ▪ JSP forces developer into an all-Java programming model because it can make native calls only to Java classes or

▪ Dynamic content of JSP can be served in a variety of formats such as HTML/DHTML, WML or XML. ▪ JSP Completely leverages the Servlet API (developer.java.sun.com, 1996-2000).	JavaBeans, which are written only in Java ▪ JSP delivers poorer performance compared to Microsoft's ASP technology on Windows platforms (newsoftland.co.nz).

2.4.3.2 Active Server Page.Net (ASP.Net)

ASP.NET is the latest set of technologies in the Microsoft .NET Framework for the rapid development building XML Web services and Web applications. It is a major transition from Active Server Pages (ASP2.0/3.0) to a robust object oriented environment. ASP.NET pages execute on the server and generate markup such as HTML, WML, or XML that is sent to a client computer.

Table 2.10: Pros and Cons for ASP.NET

Pros	Cons
▪ Database-driven functionality allows programmers to develop web applications that interface with a database. ▪ The code is compiled into "machine language" before visitor viewed a website ▪ Allows programmers to set up pages or areas of pages that are commonly reused to be cached for a set period of time to improve the performance of web applications. ▪ Automatically recovers from memory leaks and errors to ensure the availability of a website. ▪ Supports more than 25 .NET languages such as VB.Net, C#, and JScript.Net (msdn.microsoft.com). ▪ Provides rich set of libraries. ▪ Simplifies building of business objects by separating content from business logic (Steve Schwab, 2001).	▪ ASP.NET is not multi-platform support and it needs to be hosted on a Microsoft web server (brillianceweb.com, 2003).

2.4.3.3 Microsoft Visual Basic.Net (VB.Net)

Microsoft Visual Basic.NET is the newest productive version of the Visual Basic tool set that enables developers to address today's pressing application development issue effectively and efficiently.

VB.NET enables to create rich applications for Microsoft Windows in less time, incorporate data access from a wider range of database scenarios. It also create component with minimal code, and build web-based applications.

VB.NET provides a first class object-oriented programming language with new features such as implementation inheritance, overloading, and parameterized constructors. Additionally, developers will be able to create highly scrollable code with explicit free threading and highly maintainable code with the addition of modernized language constructs like structured exception handling.

2.4.4 Database Management System

2.4.4.1 Microsoft SQL Server 2000

Microsoft SQL Server 2000, which is descendent of Microsoft SQL Server version 7.0, provides innovative capabilities that increase employee effectiveness, integrate heterogeneous IT ecosystems and maximize capital and operating budgets (microsoft.com, 2002).

It is an enterprise data management platform that integrates Structured Query Language (SQL)–based, relational database with Extensible Markup Language (XML). Some new features of Microsoft SQL 2000 are depicted as follow:

1. Cascading Declarative Referential Integrity reserves referential integrity of tables while implements cascading to allow a wider range of operations (stylusinc.com).
2. The built-in XML enables a seamless transfer of data and simplifies the integration of back-end systems.
3. SQL Server 2000 Analysis Services provides sophisticated analysis on large and complex data using multi-dimensional storage.
4. Data Transformations (DTS) Import and Export Wizards and the DTS Package Designer automate the loading, extraction and transformation of data from heterogeneous sources.
5. Enable remote users access data through HTTP (Hypertext Transfer Protocol) without connected to the Intranet.

Table 2.11: Pros and Cons for Microsoft SQL Server 2000

Pros	Cons
▪ Support up to 16 simultaneous instances on one single computer and 32 processors in a single instances (stylusinc.com). ▪ High performance, reliable and secure. ▪ Enterprise-level database management with maximum database size of roughly 1,000,000 terabytes.	▪ Does not have cluster scalability ▪ High cost in setting up the system ▪ It is difficult to administer.

2.4.4.2 MySQL

MySQL is one of the most popular versions of Open Source SQL database, which is developed, distributed, and supported by MySQL AB (a commercial company that founded by the MySQL developers). It is a platform for building mission critical and heavy load database solutions. Some of the features that available in MySQL are:

1. internals and portability
2. Scalability and limits. Handles large database.
3. Embedded MySQL server library enable easier to embed of MySQL server in third party software and solutions.
4. Query cache in MySQL gives a huge speed boost to applications with repetitive queries.
5. Simplify the migration from other database systems to MySQL Server.
6. Multi-table DELETE and UPDATE statements have been added.
7. Securities provide.

Table 2.12: Pros and Cons for MySQL

Pros	Cons
▪ It is free. ▪ Extensive online documentations are available. ▪ Compatible with many different operating systems.	▪ Free version does not provide technical support. ▪ Not fully SQL92 complaint which may be cause problems with application server that form their own SQL queries (cegt201.bradley.edu, 2003).

	▪ Object below the table level cannot be locked. ▪ It is limit to 32 indexes per table which database size limited to maximum file size of operating system (cegt201.bradley.edu, 2003).

2.4.5 Data Access Technology

2.4.5.1 ADO.NET

ADO.NET provides consistent access to data sources such as Microsoft SQL Server and the data sources exposed through OLE DB and XML. Data-sharing consumer applications can use ADO.NET to connect to these data sources and retrieve, manipulate, and update data. In addition, it leverages the power of XML to provide disconnected access to data.

The components of ADO.NET architecture are shown as follow:

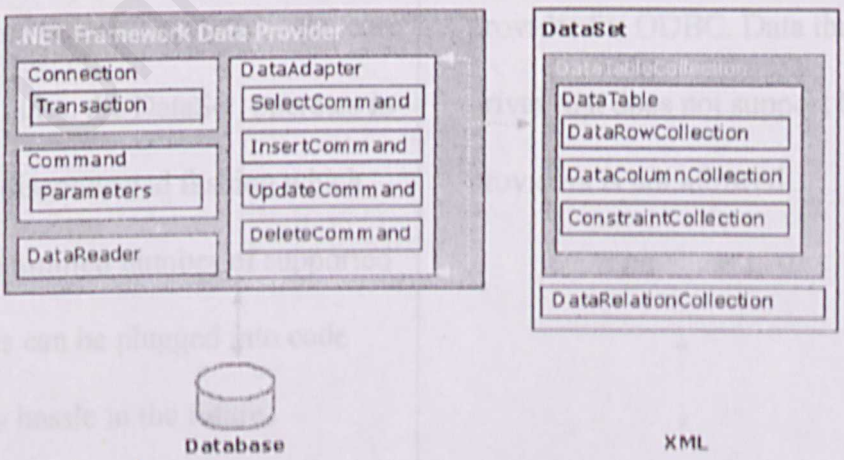


Figure 2.12: The components of ADO.NET architecture (msdn.microsoft.com).

There are two central components of ADO.NET that have been designed to factor data access from data manipulation, which are the DataSet, and the .NET Framework data provider.ADO.NET DataSet is the core component that explicitly designed for data access independent of any data source. This resulting the use of ADO.NET in multiple and differing data sources. While .NET Framework data provider is the component that is explicitly designed for data manipulation and fast, forward-only, read-only access to data.

Table 2.13: Pros and Cons for ADO.NET

Pros	Cons
▪ Performance –It is extremely fast. ▪ Optimized SQL Provider – SQL Server Data Provider that is highly optimized for interaction with SQL Server uses TDS (Tabular Data Stream) format for exchanging information. ▪ XML Support (and Reliance). ▪ Disconnected Operation Model – the core ADO.NET class, the DataSet, operates in an entirely disconnected fashion which allows an unlimited number of supported data sources can be plugged into code without any hassle in the future. ▪ Rich Object Model – the entire	▪ Managed-Only Access –utilize the ADO.NET architecture just for managed code and there is no COM interoperability allowed for ADO.NET. ▪ Only Three Managed Data Providers (so far) – they are OLEDB provider, SQL Server Data Provider and OLEDB provider for ODBC. Data that requires a driver that does not support by the three providers is not allowed.

▪ ADO.NET architecture is built on a hierarchy of class inheritance and interface implementation.	

2.4.6 Authoring Tools

2.4.6.1 Macromedia Dreamweaver MX

Dreamweaver MX is the latest release from the Macromedia and it has some significant improvements over version 4. It delivers a complete set of tools for creating and managing any professional web site and Internet applications.

Table 2.14: Pros and Cons for Macromedia Dreamweaver MX

Pros	Cons
▪ It is a powerful tool to create, build and manage websites. ▪ Integrated workspace shared with Flash MX and Fireworks MX ▪ Site setup wizard helps to configure site information instantly (Nick dePlume, 2002).	▪ Places unnecessary tags that just take up space and bandwidth. ▪ Uses a lot of memory. ▪ Many features included that resulting in clumsy interface and long learning curve.

▪ Built-in reference guides. ▪ Provide the ability to work on multiple sites. ▪ User can download extensions ▪ Animation capability is built in ▪ Generates easy to customize HTML.	

2.4.6.2 Microsoft FrontPage 2003

Microsoft FrontPage 2003 is web site creation-and-management solution that provides the tools needed to create and control professional-quality Web sites. The FrontPage 2003 provides the features, flexibility, and functionality. The new features that include in Microsoft FrontPage 2002 are:

1. Designing: use the enhanced design tools to produce better looking web site. Use the new layout and graphic tools to make it easier to design.
2. Coding: design tools is use to generate better code and with using the professional coding tools, can helps in writing the code faster, more efficiently and also more accuracy.

Table 2.15: Pros and Cons for Microsoft FrontPage 2003

Pros	Cons
▪ It is simple and fast to use. ▪ No need HTML. ▪ Navigation view helps to organize web site visually. ▪ Interface similar to Microsoft Product ▪ Built-in templates and wizards allow the creation of website in easy and simple way.	▪ HTML code not always standard or efficient. ▪ It is difficult to run on non-Microsoft servers. ▪ It is expensive and web site must be configured to accept it. ▪ Most themes are ugly. .

2.4.6.3 Microsoft Visual Studio .NET 2003

Microsoft Visual Studio .NET 2003 is the comprehensive, multi-language development tool for rapidly building Microsoft .NET–connected applications for Microsoft Windows and the Web, that dramatically increase developer productivity and enable new business and enterprise opportunities. Visual Studio .NET 2003 is available in four editions which are Enterprise Architect, Enterprise Developer, Professional and Academic. The new features in Microsoft Visual Studio .NET 2003 are shown as follow:

1. Integrated ASP.NET Web Forms and the Visual Studio .NET Web Forms Designer enable the creation of browser-based applications for WAP mobile devices or smart client applications for the Pocket PC.

2. Applications for Pocket PC and other smart devices powered by Microsoft.NET Compact Framework can be build, debug and deploy using Microsoft Windows Forms designer (msdn.microsoft.com).

Table 2.16: Pros and Cons for Microsoft Visual Studio .NET 2003

Pros	Cons
▪ It is a powerful tool to create powerful applications quickly and effectively. ▪ It supports multi programming languages. ▪ It enables developers to program in C++ to write multi-threaded applications. ▪ It enables developers to convert existing business logic into reusable XML web services, encapsulating processes and making them available to applications on any platform.	▪ It is expensive. ▪ Hefty hardware requirements.

Chapter 3 Research Methodology

3.1 Introduction and Concept of Methodology

Methodology is a component of a software process. It is a formal and precise system development process that defined a set of activities, methods, best practices, deliverables and automated tools for system developers to use to develop and maintain most of all information system and software.

3.2 Methodology Consideration

After the review and analysis on the candidate methodology, the methodology that adopted in the development of EMPHASIS is Unified Process (UP). The UP is based on three key ideas: use-case driven, architecture centric, and iterative and incremental. It leverages the Object Management Group's (OMG) Unified Modeling Language (UML).

3.2.1 Overview of the Unified Process

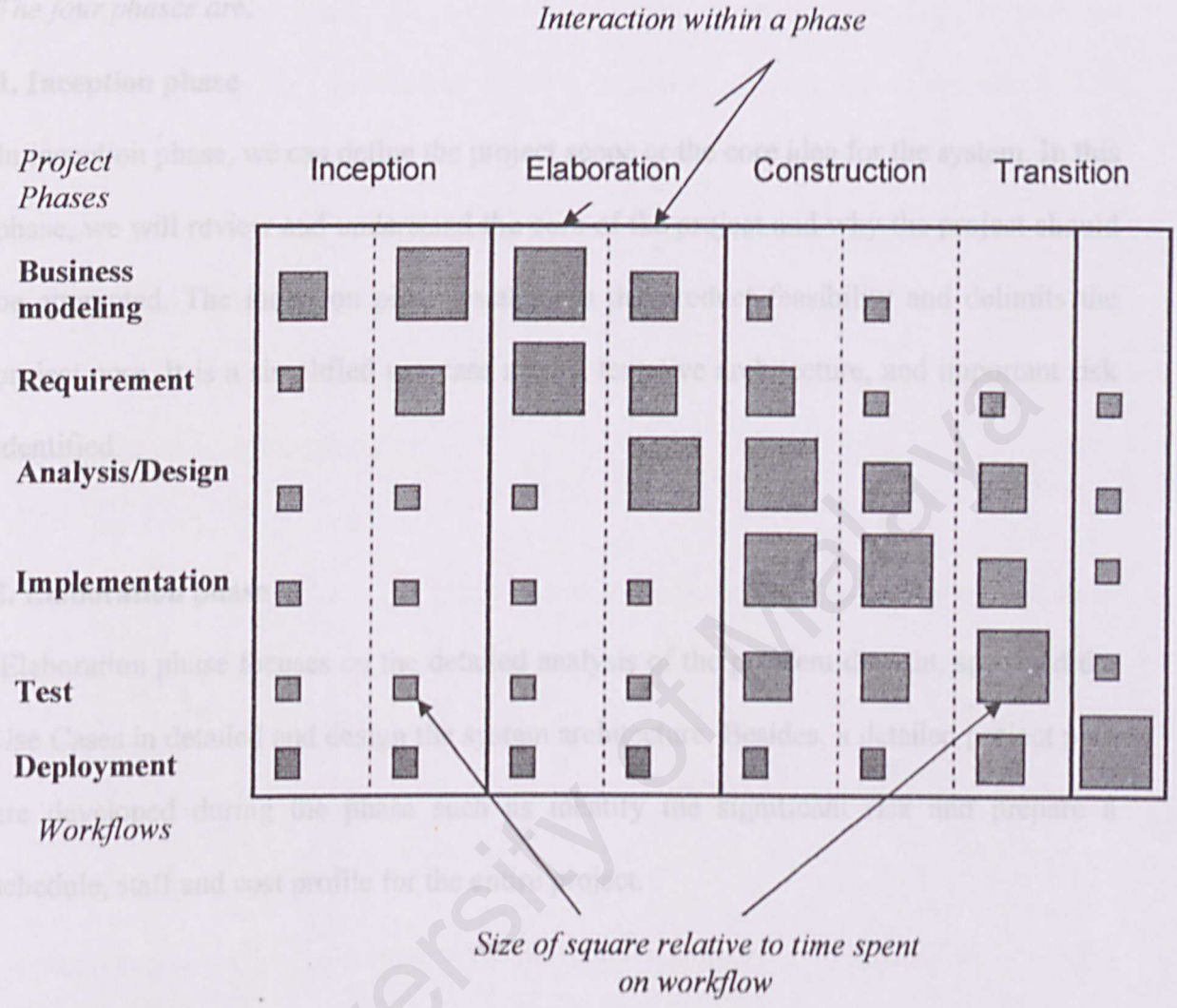


Figure 3.1: Overview of Unified Process

As we can see in figure 6, the UP can be described in two dimensions. The horizontal axis represents time and shows the lifecycle aspects of the as it unfolds. The vertical axis represents core process workflows which group activities logically by nature. The square in UP represents time spent on the workflow where size of square relative to time spent.

It consists of four phases and six core process workflows.

The four phases are:

1. Inception phase

In inception phase, we can define the project scope or the core idea for the system. In this phase, we will review and understand the core of the project and why the project should be attempted. The inception phase establishes the product feasibility and delimits the project core. It is a simplified use case model, tentative architecture, and important risk identified.

2. Elaboration phase

Elaboration phase focuses on the detailed analysis of the problem domain, specified the Use Cases in detailed and design the system architecture. Besides, a detailed project plan are developed during the phase such as identify the significant risk and prepare a schedule, staff and cost profile for the entire project.

3. Construction phase

During this phase, the detailed design for the system is develop and integrated. All the features of the system will thoroughly tested and the outcome at the end of the phase is the completed system along with user manual. For the analysis is still continues, but design and coding predominate.

4. Transition phase

During the transition phase, the system is transfer to user community. It includes manufacturing, shipping, installation, training, technical support and maintenance. The goal of the phase is to ensure that the requirements have satisfied the stakeholders. Besides, others activities that include in this phase are site preparation, manual completion, and defect identification and correction.

The six core process workflows are:

1. Business modeling workflow

The main purpose of business modelling is to eliminate the communication gap between the two communities by using business use case. Business use case is used to model how business should support the business.

2. Requirement workflow

Requirements workflow describes what the system should do. It usually involves the process of elicit, organize and document required functionalities and constraints. Tradeoffs and decisions will also be tracked in this workflow.

In this project, different approaches such as questionnaire, research from internet and etc have been used to gather the different information from various resources. Use case diagram in UML is used to model the functional requirement of the system. Besides that, non-functional requirements, hardware and software requirements also are identified in this workflow.

3. Analysis and design workflow

Analysis and design workflow show how the system will be realized in the implementation workflows. A design model and optionally an analysis model will be created in this workflow. The design model serves as an abstraction of the source code and show how the code is structured and written.

In this project, to design this system architecture will use single-tier application. Class diagram and sequence diagram are used respectively to design database and system functionality. Graphical user interface (GUI) concepts will be used to design the interface of system.

4. Implementation workflow

The subsystem identified during design workflow is implemented. The subsystem will also be tested during implementation workflow.

5. Testing workflow

Testing workflow is to ensure the proper integration of all subsystem and verify that all the requirements have been correctly implemented. It also aims to identify the defects prior to the deployment workflow.

All the subsystem in this system will be integrated into a complete system. Then, integration testing will be conducted to verify that all the requirements have been implemented and correctly implemented.

6. Deployment workflows

The purpose of deployment workflow is to produce product release successfully and deliver it to the end user.

This system will pass up to the supervisor.

The UP cycle begin with the first iteration of the inception phase; follow by the second iteration and so on until the inception phase milestone is achieved. Then the process continues with the iterations of elaboration phase, construction phase and transition phase. The major purpose of the four phases in Unified Process is to define a specific major milestone for each phase. By specifying a major milestone for each phase, the iteration of workflows within each phase can be done with a clear objective and the iterations can be planned in a systematic way.

The Unified Process claimed in:

- Capture and present best practice as an ongoing improvement model
- Can reduce risk
- Will increase predictability
- Will promote common vision and culture

3.2.2 Characteristics of Unified Process

The three unique characteristics of Unified Process are shown as below:

Use case driven

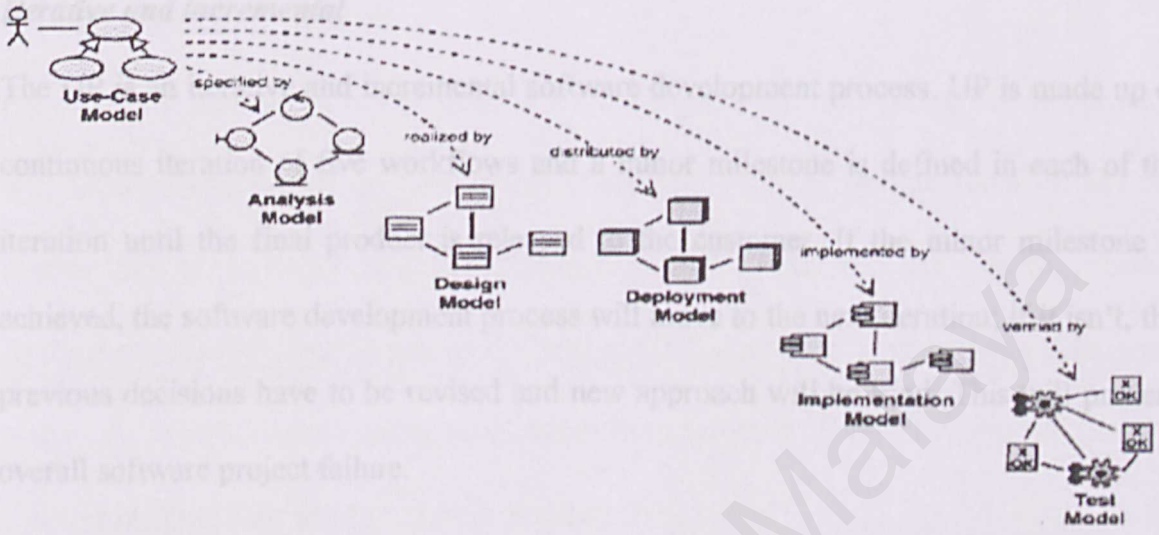


Figure 3.2: Use Case Driven

UP is a use case driven process because use case driven the whole software development process. Based on the use case model, the analysis model and design model is created to realize and specify the use cases respectively. The use case model is then implemented and finally testing is carried out on the implementation to verify that all use cases have been implemented correctly. Besides that, user cases not only initiate the development process but also blind them together.

Architecture centric

UP is architecture centric software development process because architecture provides structural guide to the development work. Good software must have both functionalities capabilities and a reliable architecture. In UP, the functional capabilities are driven by the

use case while the architecture must allow enough room for the realization of these use cases, either for now or in the future.

Iterative and incremental

The UP is an iterative and incremental software development process. UP is made up of continuous iteration of five workflows and a minor milestone is defined in each of the iteration until the final product is released to the customer. If the minor milestone is achieved, the software development process will move to the next iteration; if it isn't, the previous decisions have to be revised and new approach will be tried. This will prevent overall software project failure.

3.3 Justification of Methodology

The Unified Process has provided a framework for application development. It can identify the essential activities and helps to layout a formal plan for the software development process.

Here is the reason why I'm chosen UP as a development methodology:

- UP is a use case driven. All the phases in the software development process are based on use case model. It provides a comprehensive and structure guideline in developing the system. Besides, it also helping in ensuring the all functionalities of the system has been implemented.
- Unified Process also supports iteration and incremental nature of the software development.

There are many modeling tools that used to support the Unified Process such as Rational Rose, Microsoft Visio and System Architect.

3.4 Fact Finding Method

Fact finding method is importance in order to establish understanding of the state and future requirement on the system study and provide the groundwork for the system design. In order to get all the information to develop the system, the fact finding method are need such as collecting hard data like from written document or report, using questionnaires and research on internet. The following are the fact finding method that used to collect the data:

- Discussion with supervisor

Discussion with the supervisor must conduct from time to time. The aims are to get a guidelines or guidance and advice. This approach will help in producing the report and the system in the right way.

- Questionnaire (refer to Appendix I)

The questionnaire was conduct to get the data of the large population of students about the emotional, mental and physical health that poisoning their health. The result from the questionnaire will be analyze and transformed it to statistic analysis.

- Research from internet

Internet is the place that we can gain any information. Most of the research is for literature review on distributed system, development tools and technology, database, project methodology and others that can research from internet.

- Research from books and references

The important research is from the thesis report from FSKTM library that give me guidance for written a report. Beside this, I also refer to other reference books to get some useful information in develop the system.

3.5 Conclusion on Tools and Technology

After review and analyze on the candidate tools and technologies, a set of tools and technology is selected to develop the Analysis the Impact of Emotional, Mental and Physical Health System. The selected tools and technology are shown as below:

Selected application platform

After identify the pros and cons of all proposed application platform, I decided to use Windows XP Professional as the system application platform. It is because Windows XP Professional is suitable for businesses of all sizes due to its manageability, reliability and security features.

Advantages of Window XP Professional:

- Reliable, secure and more easily recover from system problems.
- Easy to use due to its intuitive, task-based design.
- Suitable for enterprise or organizational level.
- User friendly with windows based interface.
- Remote Assistance - allows user to have a friend or IT professional that is also running Windows XP remotely control user's computer to demonstrate a process or help solve a problem.
- Encrypting File System provides a high level of protection of with a randomly generated key.
- Windows Messenger provides an easy way to communicate and collaborate in real time on user's computer.

Selected programming language

The programming language that has been chosen is Microsoft Visual Basic.NET.

Advantages of Microsoft Visual Basic.NET:

- Effectively and efficiently.
- Create rich application in less time.
- Incorporate data access from a wider range of database scenario.
- Create component with minimal code.

Selected Authoring Tools

The authoring tool that has been chosen is Microsoft Visual Studio .NET 2003. It is a comprehensive and powerful development tool for creating applications.

Advantages of ADO.NET

- Powerful tool to create powerful applications quickly and effectively.
- Supports multi programming languages.
- Enables developers to program in C++ to write multi-threaded applications.
- Has beautiful Integrated Development Environment (IDE).
- Enables developers to convert existing business logic into reusable XML web services, encapsulating processes and making them available to applications on any platform.

Selected Database Management Systems

The Database Management Systems that has been selected in this project is Microsoft SQL Server 2000.

Advantages of Microsoft SQL Server 2000

- High performance, reliable and secure
- Cascading Declarative Referential Integrity reserves referential integrity of tables while implements cascading to allow a wider range of operations.
- SQL Server 2000 Analysis Services provides sophisticated analysis on large and complex data using multi-dimensional storage.

- Data Transformations (DTS) Import and Export Wizards and the DTS Package Designer automate the loading, extraction and transformation of data from heterogeneous sources.
- Support up to 16 simultaneous instances on one single computer and 32 processors in a single instances.
- Enterprise-level database management with maximum database size of roughly 1,000,000 terabytes.

Selected Data Access Technology

ADO.NET is selected as data access technology of this project. It is because ADO.NET provides consistent access to data sources such as Microsoft SQL Server. Data-sharing consumer applications can use ADO.NET to connect to the data sources and retrieve, manipulate, and update data.

Advantages of ADO.NET

- Performance –It is extremely fast.
- Optimized SQL Provider – SQL Server Data Provider that is highly optimized for interaction with SQL Server uses TDS (Tabular Data Stream) format for exchanging information.
- XML Support (and Reliance).
- Rich Object Model – the entire ADO.NET architecture is built on a hierarchy of class inheritance and interface implementation.

Selected Multimedia Tool

Macromedia Flash MX is selected in developed the EMPHASIS.

Advantages of Macromedia Flash MX:

- Produce movies, animation, and presentations.
- Easy to use.
- It is a cross-browser platform.
- Allow to import MP3 sound files.

Adobe Photoshop 7.0

Adobe Photoshop 7.0 is selected in use of images and backgrounds design.

Advantages of Adobe Photoshop 7.0:

- Powerful tools for digital image enhancement, photo retouching and image composing.
- Provides high quality images and graphics with smallest possible size.

Chapter 4 System Analysis

System analysis is the most important phases in the software development. It is a process used identifies a better course of action and make a better decision than might otherwise have made. It means defining the problem, gathering pertinent information, understand the system, comparing and selecting the best alternative to establish system requirement.

4.1 Analysis result from fact finding

4.1.1 Questionnaires analysis result

In order to conduct the survey of healthy, 440 copies survey form have been sent out for FSKTM final year's students. About 150 copies survey are completed. All the collected data have been analyzed and summarized to identify the level of emotional, mental and physical health problems for FSKTM's students and the important of develop EMPHASIS (Vera Peiffer, 2002).

1. Comparison between emotion, mental and physical health problems among students

Table 4.1: Comparison between emotional, mental and physical health problems

Categories	**Number of students**	**Total**
Emotional health	107	**150**
Mental health	68	**150**
Physical health	41	**150**

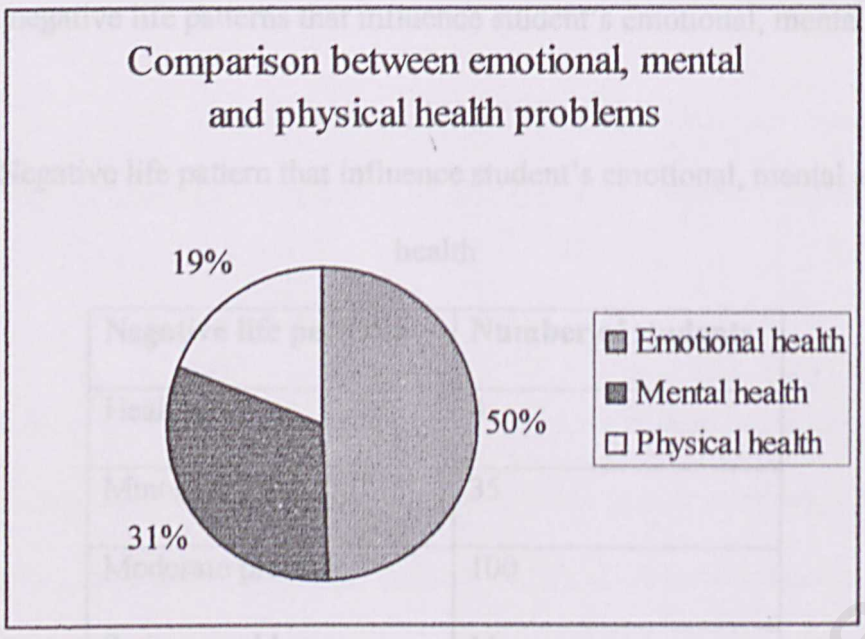


Figure 4.1: Comparison between emotional, mental and physical health problems

The pie above is percentage compare between emotional, mental and physical health problems among the FSKTM students. Half of the percentages consist of students who have emotional health problem. Emotional health problems can be anger, pride and greed. 31% of students consist of mental health problem and 19% have physical health problems.

2. Tested on negative life patterns that influence student's emotional, mental and physical health.

Table 4.2: Negative life pattern that influence student's emotional, mental and physical health

Negative life patterns	Number of students
Healthy	4
Minor problem	35
Moderate problem	100
Serious problem	11
Total	**150**

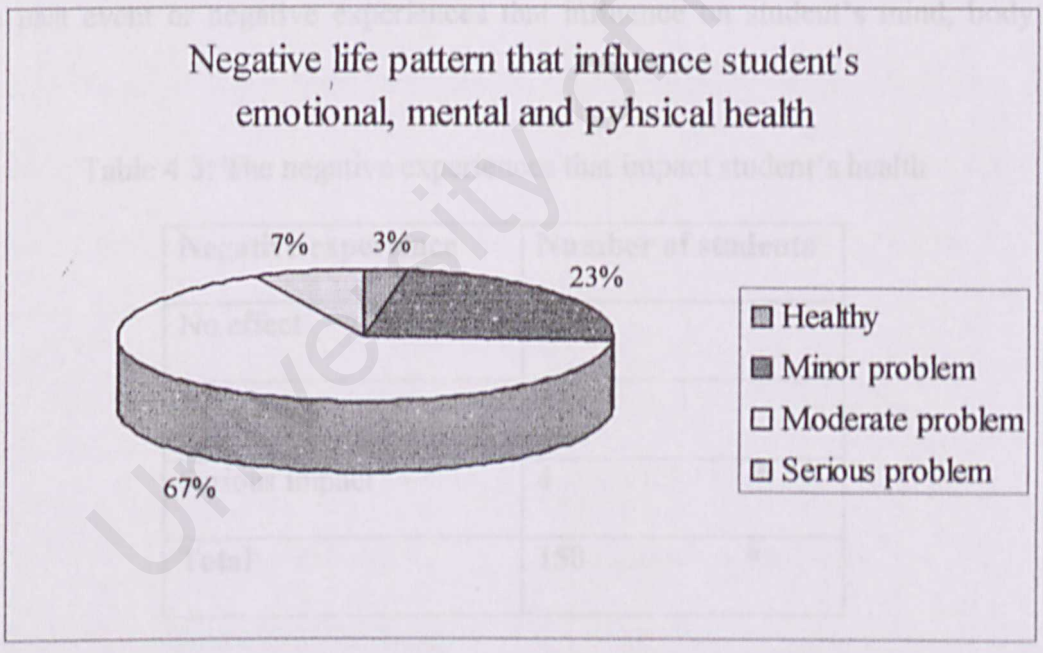


Figure 4.2: Negative life pattern that influence student's emotional, mental and physical health

The negative life pattern include starting things and never finishing them, constant worrying, staying in untenable situations and suffering from recurring illness or health problems.

67% of the students have moderate problem with their life pattern. Although it is not a serious problem but there have a problem in student's life patterns that need addressing. The most serious problem of live pattern consists of 7%. 23% for minor problem of life pattern and for health students is consists only 3%. Consequence, the exercises are needed for those students that have negative life pattern.

3. The past event or negative experiences that influence on student's mind, body and spirit.

Table 4.3: The negative experiences that impact student's health

Negative experience	**Number of students**
No effect	115
Moderate	31
Serious impact	4
Total	**150**

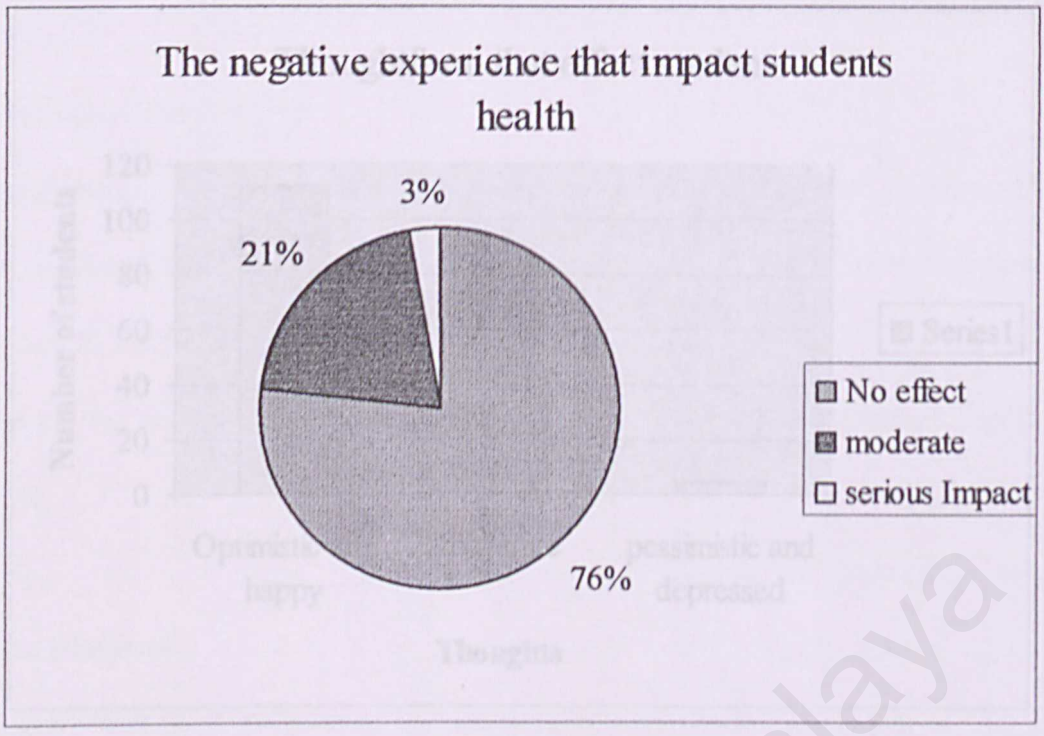


Figure 4.3: The negative experiences that impact student's health

Nowadays, most of the healthy problem cause by negative experiences. The negative experiences can have a major impact on people well-being. 76% of students don't have any affected from negative experience. The serious of problems consist of 3%.

.

4. The negative thoughtforms that are blocking student's progress in life.

Table 4.4: thoughtforms that effect students

Student's thoughts	**Number of students**
Optimistic and happy	112
Moderate	33
Pessimistic and depresses	5
Total	**150**

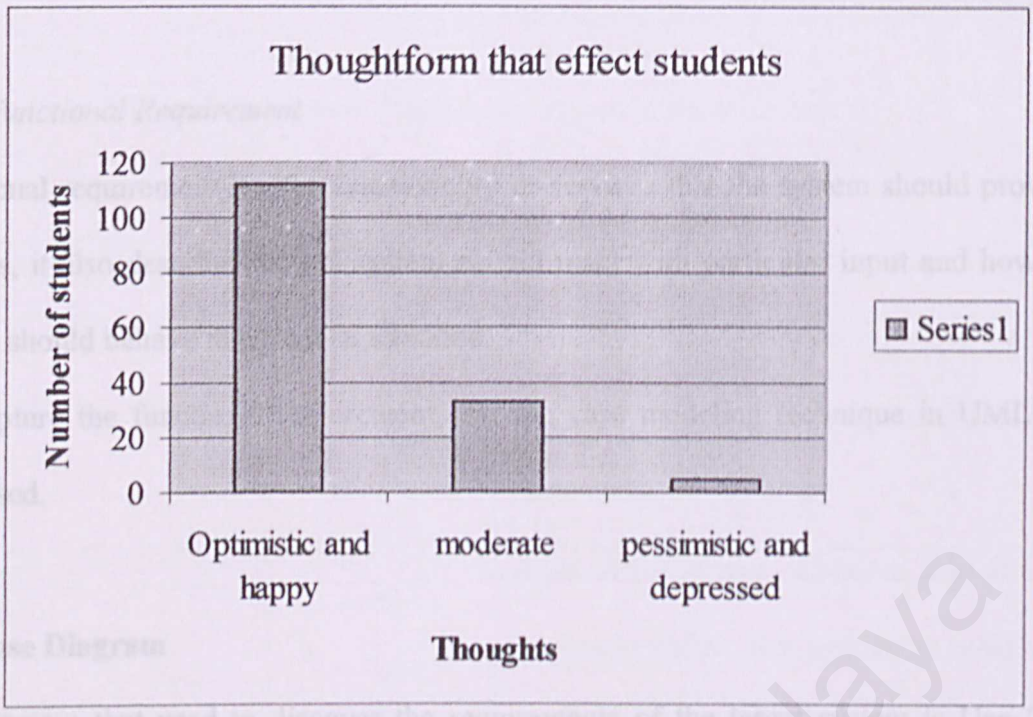


Figure 4.4: Thoughtforms that effect students

Thoughtform evoke feelings and feelings trigger physical and mental responses. The chart above is evaluated whether students have negative thoughtforms that are blocking the progress in life. Most of the students have optimistic and happy and always view of student's abilities. There have 3% of students who have pessimistic and depressed, this kind of level need to have some treatments to overcome their weakness.

4.2 Requirement Analysis

Requirement Analysis is a process to discover the requirement for the system. The requirement analysis consists of functional requirement and non-functional requirement.

4.2.1 Functional Requirement

Functional requirement are the functionality or services that the system should provide. Besides, it also describes how a system should react with particular input and how the system should behave in particular situation.

For capture the functional requirement, the use case modeling technique in UML has been used.

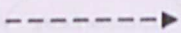
Use Case Diagram

The diagram that used to discover the requirements of the target system is Use Case Diagram. The Use Case contains model elements for a system, the actors and the use-case, and also shows the relationship between these elements. The usages of the use case diagram are below:

- It presents the behavior of the system from a user's standpoint.
- It provides functional description of the system.
- It provides graphic description of the users of a system.
- Describes what kinds of interactions to expect within the system.
- It will display the details of the processes that occur within the application area.

The notations that used in use case diagram are shown in the table below:

Table 4.5: Use Case Notations

Elements / Relationship	**Notation**	**Description**
Actor		A coherent set of roles that users of use cases play when interacting with these use case
Use case		A set of sequences of actions that an actor performs within the system to achieve a particular goals.
Association		Communication between actors and system by sending or receive message.
Include dependency	<<include>> 	Dependency that specifies that the target use case includes the behavior of the source.

Use Case Diagram

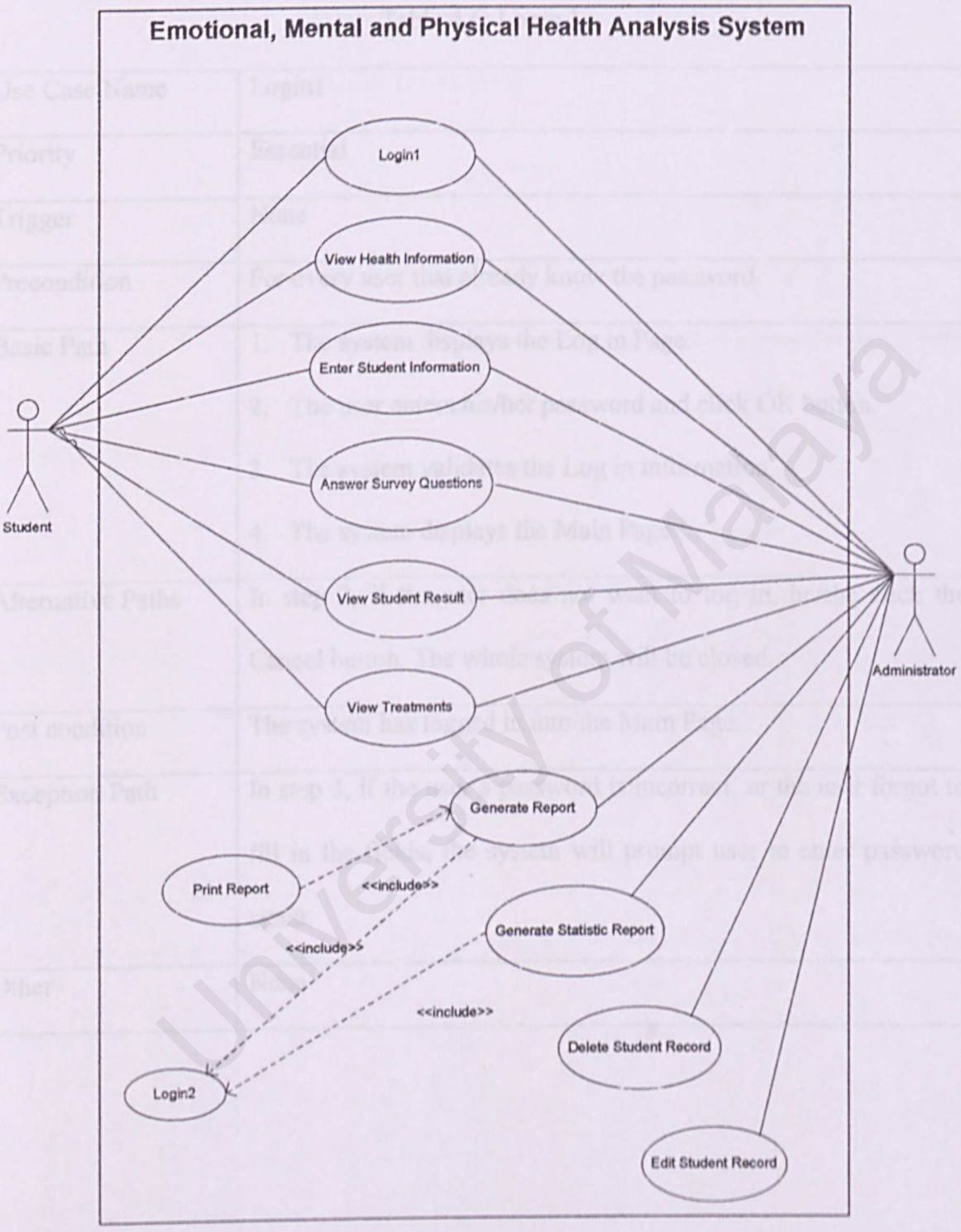


Figure 4.5: Use Case Diagram for Analysis the Impact of Emotional, Mental and Physical Health System

Log In1:

Table 4.6: Login 1

Use Case Name	Login1
Priority	Essential
Trigger	None
Precondition	For every user that already know the password
Basic Path	1. The system displays the Log in Page. 2. The user enters his/her password and click OK button. 3. The system validates the Log in information. 4. The system displays the Main Page.
Alternative Paths	In step 2, if the user does not want to log in, he/she click the Cancel button. The whole system will be closed.
Post condition	The system has logged in into the Main Page.
Exception Path	In step 3, if the user's password is incorrect, or the user forgot to fill in the fields, the system will prompt user to enter password again.
Other	None

View Health Information

Table 4.7: View Health Information

Use Case Name	View Health Information
Priority	Optional
Trigger	None
Precondition	The user opens the system.
Basic Path	1. The system displays the View Health Information page.(main page) 2. After finished viewing the information, he/she click the Student Information button on the Main page 3. The system will go to Student Information page.
Alternative Paths	In step 2, if the user does not want to view the health information, he/she can click the Student Information button to next step.
Post condition	The user has been viewed the health information that he/she wants to know.
Exception Path	None
Other	None

Enter Student Information

Table 4.8: Enter Student Information

Use Case Name	Enter Student Information
Priority	Essential
Trigger	None
Precondition	The user has been log in.
Basic Path	1. The user click on Student Information button in Main page. 2. The system displays the Student's Information Page. 3. User fills in the form. 4. After fill in the form, the user clicks on the Save button. 5. A message box is pop up to inform the user that he/she had been successfully update the information. Then, the user click Exit button and it will display the Main Page
Alternative Paths	In step 3, if the user does not want to enter him /her personal information, he/she click the Exit button. The system will return to Home Page.
Post condition	The system has logged in into the Main Page.
Exception Path	In step 4, if the user enter the incorrect information or forget to fill in the mandatory fields, a message box will pop up to inform the user that he/she had been fill in incorrectly. Then the user clicks on the OK button and the system will prompt user to enter him/her information again. Else if user enters incorrect information, he can click the

	Add/New button. The system will prompt the user with new form.
Other	None

Answer Survey Questions

Table 4.9: Answer Survey Questions

Use Case Name	Answer Survey Questions
Priority	Optional
Trigger	None
Precondition	The user has been log in into the Main Page.
Basic Path	1. The user click on the Survey Form button on the Main Page. 2. The system displays the Survey Form page and the user can select the different health that listed in the page. 3. The selected page is displayed. 4. In this page, user can answer the survey questions by answering in the text box given. 5. To submit the survey answer, the user clicks the Submit button. 6. The message box will pop up to inform user that updating information successful. Click OK button. The survey result page will display the result of the survey that the user has been answered and the suitable exercise will be given. 7. After finished, click Back button to the return to Survey Form

	page or click Next button to continue test in different health problem. 8. If the user still interest in this survey, user can repeat step 2 with select different part.
Alternative Paths	In step 2, if the user does not want to answer the survey, he/she can click others button to go to next page.
Post condition	The user has been answer the survey and can improve their healthy from doing the exercise that had given.
Exception Path	In step 4, if the user forgets to fill in the mandatory fields, a message box will pop up to inform the user that he/she had been fill in incorrectly. Then the user clicks on the OK button and the system will prompt user to enter him/her information again. Else if user enters incorrect information, he can click the Reset button. The system will prompt the user with new form.
Other	None

View Survey Result

Table 4.10: View Survey Result

Use Case Name	View Survey Result
Priority	Optional
Trigger	None
Precondition	The user has been log in into the Survey Form page.
Basic Path	1. The user click on the Survey Result button on the Main Menu. 2. The system displays the Survey Result page. 3. User can view the result from each part of the survey and appropriate exercise had been given 4. User can click on Treatment button and the Treatments page will be displays. 5. User can repeat step 4 to gain different healthy problem with different exercise.
Alternative Paths	In step 2, if the user does not want to view the Survey Result, he/she can click Cancel button. The system will return to Main Page. In step 5, if the user does not interest with the exercise, he/she can click others button to return to view others page.
Post condition	The user has been view him/her result and exercises.
Exception Path	None

Generate Report

Table 4.11: Generate Report

Use Case Name	Generate Report
Priority	Optional
Trigger	None
Precondition	The information that need to capture in the report is selected
Basic Path	1. The user click on the Generate Report button on the Main Menu. 2. The system displays the Generate Report page. 3. In the Generate Report window, user is given a sub menu listing all different kind of report names. 4. User needs to click on desired option then click Generate button. 5. Several queries are run and the report is generated 6. After view the report, user click on Close button to return to Main Page.
Alternative Paths	In step 2, if the user does not want to generate the report, he/she can click Close button. The system will return to Main Page.
Post condition	Specific report is generated
Exception Path	None
Other	None

Print Report

Table 4.12: Print Report

Use Case Name	Print Report
Priority	Essential
Trigger	None
Precondition	All information has been generate in report format
Basic Path	1. The user click on the Print Report button on the Generate Report Page. 2. The system displays the Print Report page. 3. User may select report in listing. 4. User click on Print button to print the report. 5. After finished, user can click Close button to return to Main Page.
Alternative Paths	In step 3, if the user does not want to print report, he/she can click Close button. The system will return to Main Page.
Post condition	The report has been printed and user is present with desired report.
Exception Path	None
Other	None

Generate Statistic Report

Table 4.13: Generate Statistic Report

Use Case Name	Generate Statistic Report
Priority	Optional
Trigger	None
Precondition	The information that need to capture in the report is selected
Basic Path	7. The user click on the Generate Statistic Report button on the Main menu. 8. The system displays the Generate Statistic Report page. 9. In the Generate Statistic Report window, user is given different kind of report names. 10. User needs to click on desired option then click decided topic. 11. Several queries are run and the report is generated 12. After view the statistic report, user click on Home button to return to Main Page.
Alternative Paths	In step 2, if the user does not want to generate the statistic report, he/she can click Home button. The system will return to Main Page.
Post condition	Specific Statistic report is generated
Exception Path	None
Other	None

View Treatments

Table 4.14: View Treatments

Use Case Name	View Treatments
Priority	Optional
Trigger	None
Precondition	The user has been log in into the Main Page.
Basic Path	1. The user click on the Treatments/Exercises button on the Main menu. 2. The system displays the Treatments/Exercises page. 3. User can select the different kind of treatment which they want to do by clicking on the selected treatment. 4. The system will display the treatment page. 5. After finished, user can click Back button to return to Treatments/Exercies page. 6. If user still interest with other exercise, user can repeat step 3.
Alternative Paths	In step 3, if the user does not want to view the treatment, he/she can click Back button. The system will return to Main Page.
Post condition	User has done the treatment to overcome their weakness.
Exception Path	None
Other	None

LogIn2

Table 4.15: LogIn2

Use Case Name	LogIn2
Priority	Essential
Trigger	None
Precondition	For every user that already know the password
Basic Path	1. The system displays the Log in Page. 2. The user enters his/her password and click OK button. 3. The system validates the Log in information. 4. The system display the page required by user.
Alternative Paths	In step 2, if the user does not want to log in, he/she click the Cancel button..
Post condition	The system has logged in into the View Student Report, Generate Report and Print Report pages.
Exception Path	In step 3, if the user's password is incorrect, or the user forgot to fill in the fields, the system will prompt user to enter password again.
Other	None

Delete Student Record

Table 4.16: Delete Student Record

Use Case Name	Delete Student Record
Priority	Optional
Trigger	None
Precondition	The user has been log in into the Student Information page
Basic Path	1. The user click on the Student Information button on the Main Menu. 2. The system displays the Student Information page. 3. User can select the student's name to delete his/her record in database. Then click the Delete button. 4. The system will be update and display the new list of students. 5. After finished, user can click Exit button to return to Main Page.
Alternative Paths	In step 3, if the user does not want to edit the student record, he/she can click Exit button. The system will return to Main Page.
Post condition	The student record was update.
Exception Path	None
Other	None

Edit Student Record

Table 4.17: Edit Student Record

Use Case Name	Edit Student Record
Priority	Optional
Trigger	None
Precondition	The user has been log in into the Student Information
Basic Path	6. The user click on the Student Information button on the Main Page. 7. The system displays the Student Information page. 8. User can select the student's name to edit his/her record in database. Then click the edit button. User can edit any information to the record. After that click Update button. 9. The system will be update and display the new list of students. 10. After finished, user can click Exit button to return to Main Page.
Alternative Paths	In step 3, if the user does not want to edit the student record, he/she can click Exit button. The system will return to Main Page.
Post condition	The student's record was update.
Exception Path	None
Other	None

4.2.2 Non-Functional Requirements

Non-functional requirement defined the overall qualities or attributes of the resulting system. They are requirements which are not directly concerned with the specific functions of the system. They place restrictions on how the user requirements are to be met and the user may place constraints on the software related to interfaces, quality, resources and timescales. Non-functional requirement included safety, security, usability, reliability and performance requirements.

The non-functional requirement that aims to achieve in the system are shown as below:

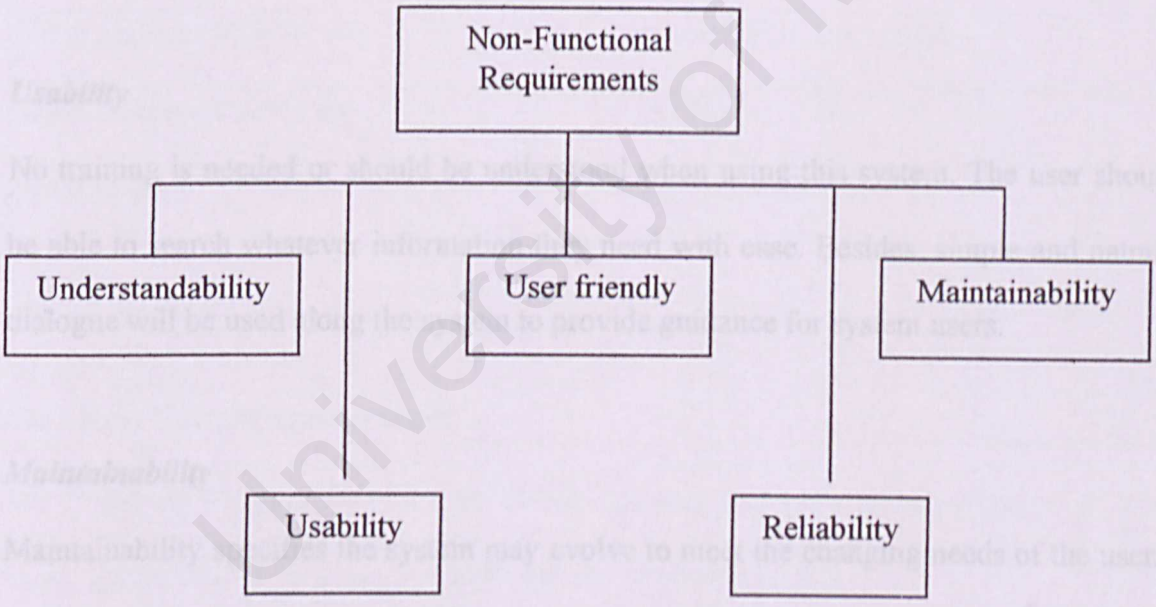


Figure 4.6: Non-Functional Requirements for Analysis the Impact of the Emotional, Mental and Physical Health System

Understandability

The system performs easy for other developer to understanding the functionality and coding method of the system. The coding are written in natural language such English.

Reliability

Reliability specified the ability of the system to behave consistently in a user-acceptable manner when operating within the environment for which the system was intended.

This system is reliable because it will not cause unnecessary and unplanned down-time.

To be a reliable system, it should be sufficient and well-planned module and integration testing.

Usability

No training is needed or should be understood when using this system. The user should be able to search whatever information they need with ease. Besides, simple and natural dialogue will be used along the system to provide guidance for system users.

Maintainability

Maintainability specifies the system may evolve to meet the changing needs of the users.

In this system, all the data in the database are integrity and availability.

User friendly

The user interfaces of this system are easy to be understood, ease to use, attractive and user friendly.

4.3 Tools and Technology Proposed

There are the most suitable and appropriate tools that have been identify and selected for developing the system. There are:

Table 4.18: Development software and tools Summary

Description	**Technologies**
Development Model	Unified Process (UP)
Application Platforms/OS	Window XP Professional
Programming Language	Microsoft Visual Basic.NET
Authoring Tool	Microsoft Visual Studio.NET 2003
Data Management System	Microsoft SQL Server 2000
Data Access Technology	ADO.NET
Editing Tool	Adobe Photoshop 7.0

4.4 Run Time Requirements

The following sections showed a list of the hardware and software requirements as well as the programming languages or software that has been chosen.

4.4.1 Developer Hardware Requirements

Table 4.19: Run Time Hardware Requirements

Processor	Intel Pentium 4 processor 1.8 GHz or higher
RAM	Minimum of 128MB Recommended 256MB
Hard disk	2.5 GB and above
Video	800 x 600, 256 color
Others	CDROM Drive, Mouse, Keyboard, Speaker, Monitor, scanner

4.4.2 Developer Software Requirements

Table 4.20: Run Time Software Requirements

Application Platform	Window XP Professional
DBMS	Microsoft SQL Server 2000
Development Tool	Microsoft Visual Studio.NET 2003
Programming Language	Microsoft Visual Basic.NET
Multimedia Tool	Macromedia Flash

4.4.3 *Client Hardware Requirements*

Table 4.21: Run Time Hardware Requirements

Processor	Intel Pentium 4 processor 1.8 GHz or higher
RAM	Minimum of 128MB Recommended 256MB
Hard disk	2.5 GB and above
Video	800 x 600, 256 color
Others	CDROM Drive, Mouse, Keyboard, Speaker, Monitor

4.4.4 *Client Software Requirements*

Table 4.22: Run Time Software Requirements

Application Platform	Window XP Professional
Multimedia Tool	Macromedia Flash

Chapter 5 System Design

5.1 System Architecture Design

System architecture design represents a critical link between the design and requirement engineering process. It describes the association of the system capabilities which identified in the requirements specification with the system components that will implement them. In addition, architecture design also describes the interconnection among the system components.

The system architecture design that I use is 2-tier client/server architecture

2-tier client/server architecture

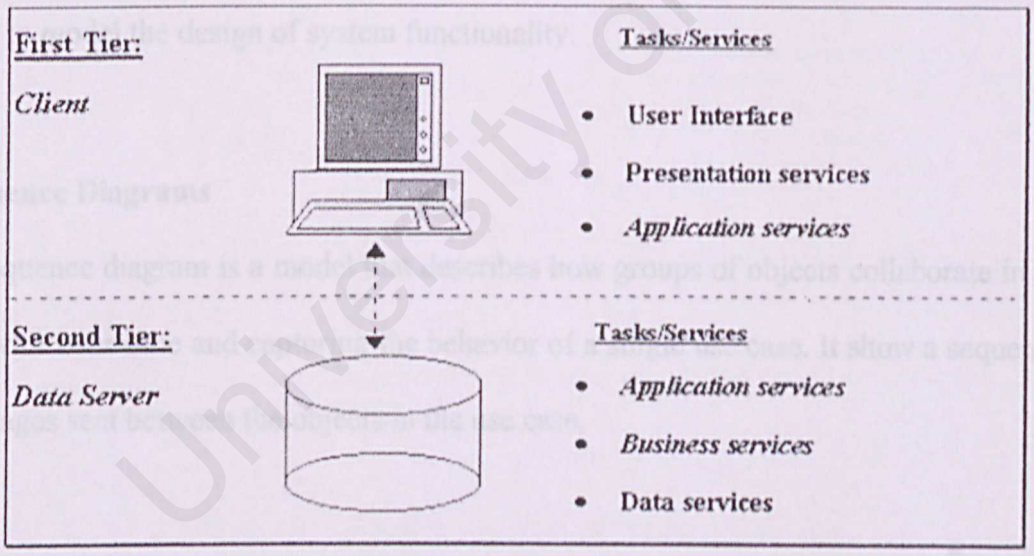


Figure 5.1: 2-tier client/server architecture

In 2-tier client/server architecture, the client machine handles the user interface while the server hosts and operates the database. Processing management split between client and server depend on whether fat-client architecture or thin-client architecture is used. In fat-client architecture, client carries the heavier load and performs a relatively heavy portion

of processing. In contrast, thin client architecture allocates only display logic to client, leaving the application logic and database processing to server.

2-tier client/server architecture is easy to develop. It allows for a large degree of flexibility in the load balancing due to its distributed nature. It is simplicity and cost effective.

5.2 System Functionality Design

System functionality design mainly concern on the design of system components that each of these components serves as a functional unit of the system. The functionality design describes how the system is organized with its functional modules and how the system functions being provided by these modules. Sequence diagram in UML will be used to model the design of system functionality.

Sequence Diagrams

A Sequence diagram is a model that describes how groups of objects collaborate in some behavior over time and capturing the behavior of a single use case. It show a sequence of messages sent between the objects in the use case.

Below are the sequence diagrams for EMPHASIS.

Login1

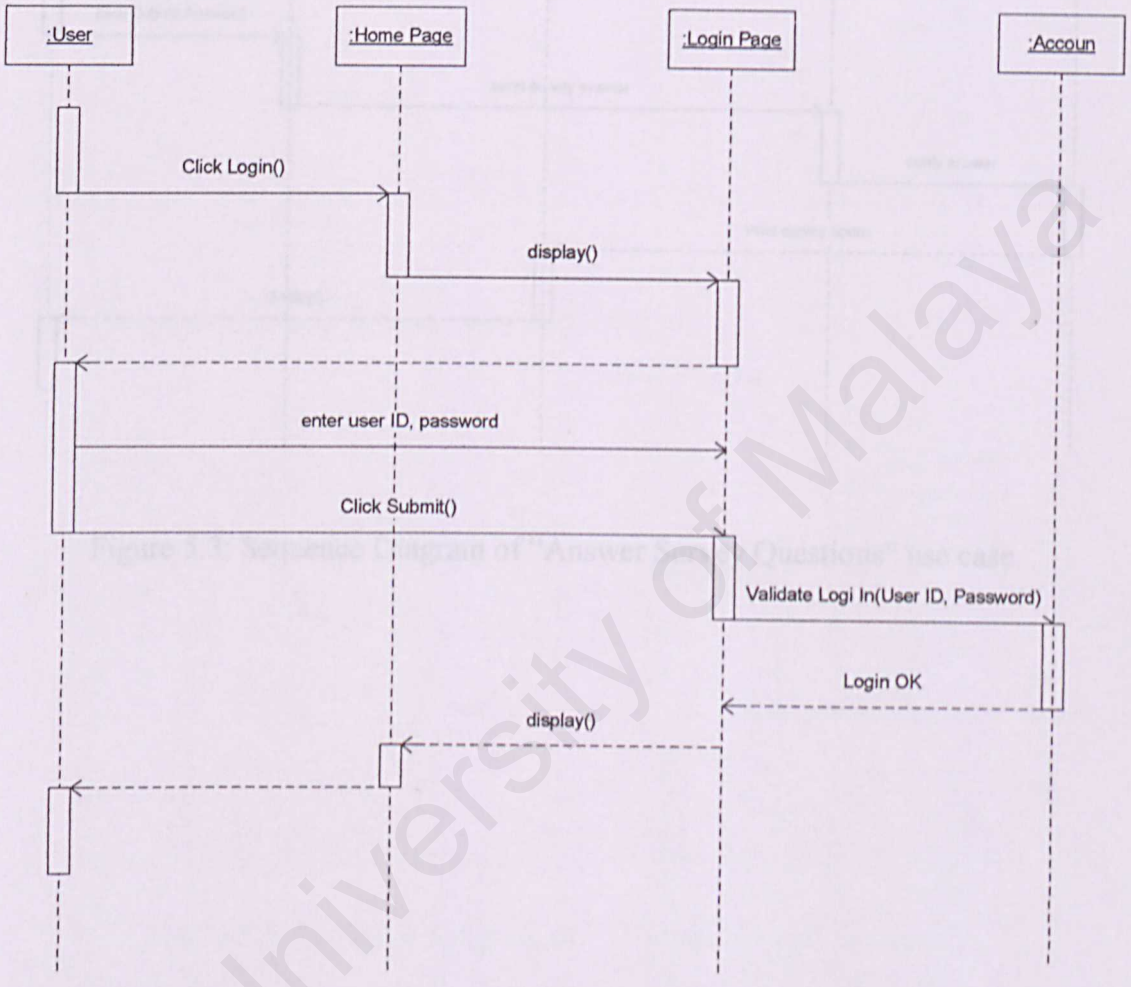


Figure 5.2: Sequence Diagram of "Login1" use case.

Answer Survey Questions

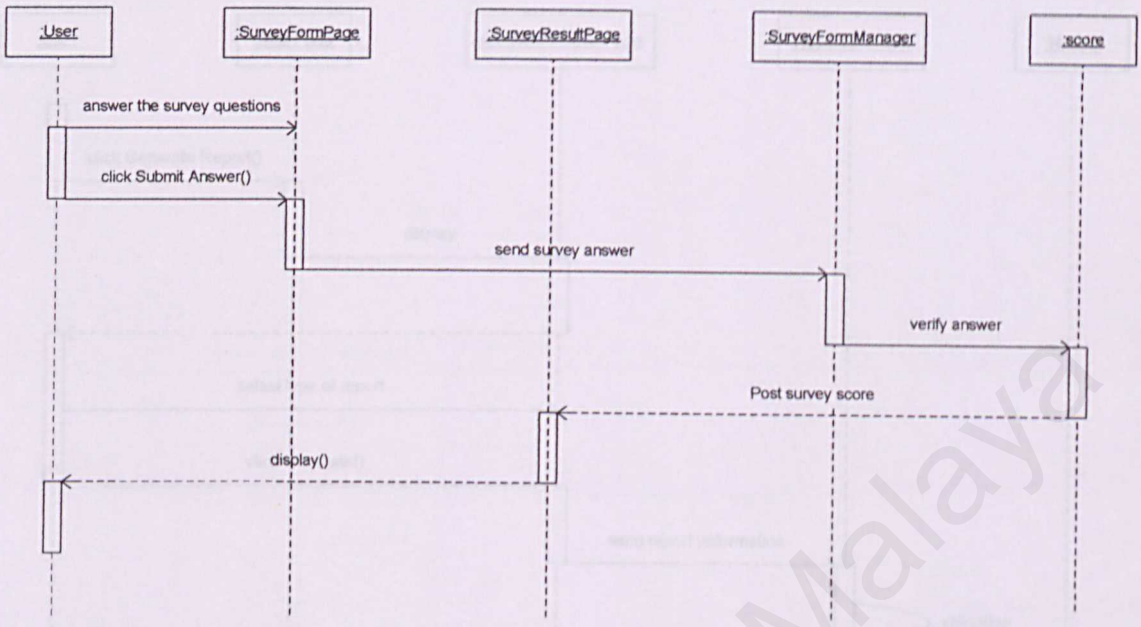


Figure 5.3: Sequence Diagram of "Answer Survey Questions" use case.

Generate Report

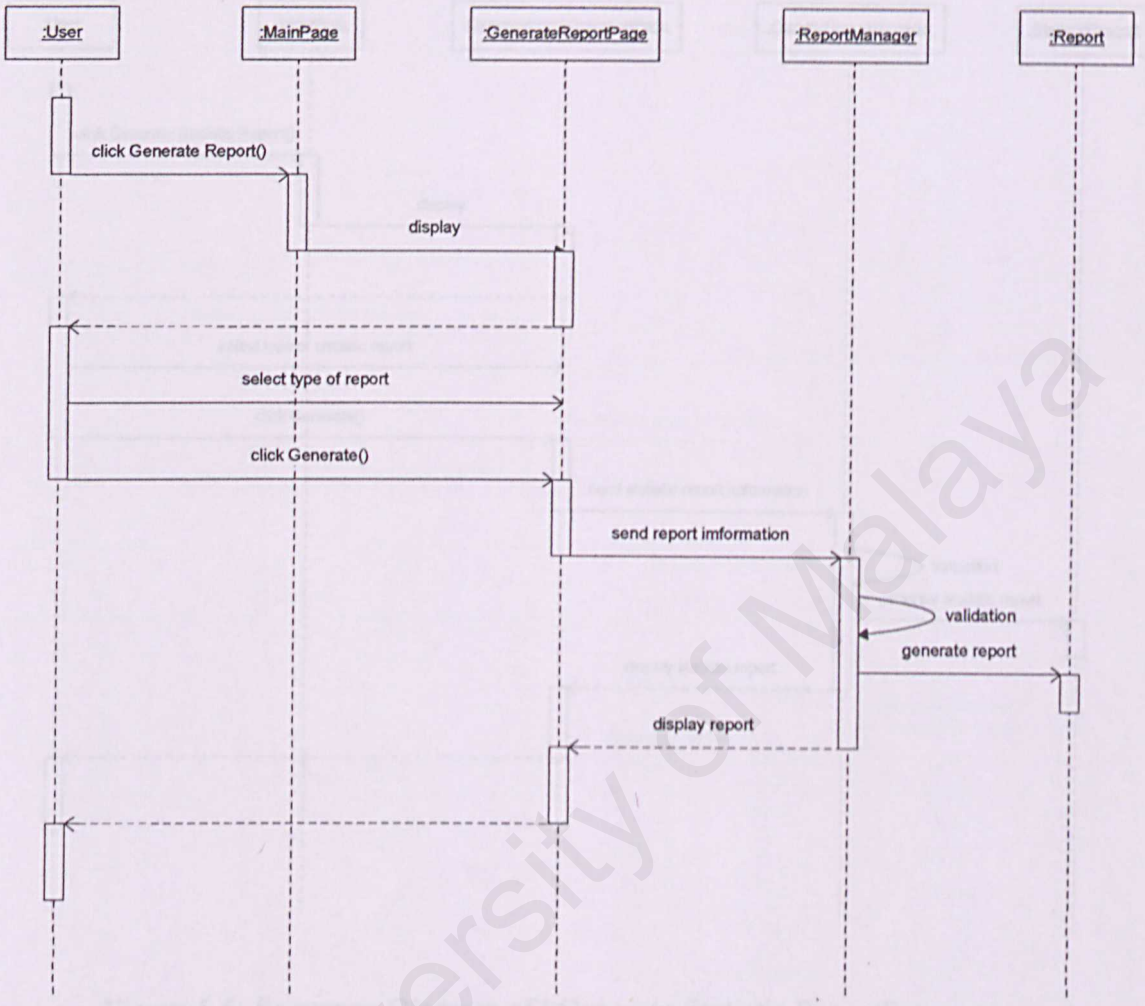


Figure 5.4: Sequence Diagram of "Generate Report" use case.

Generate Statistic Report

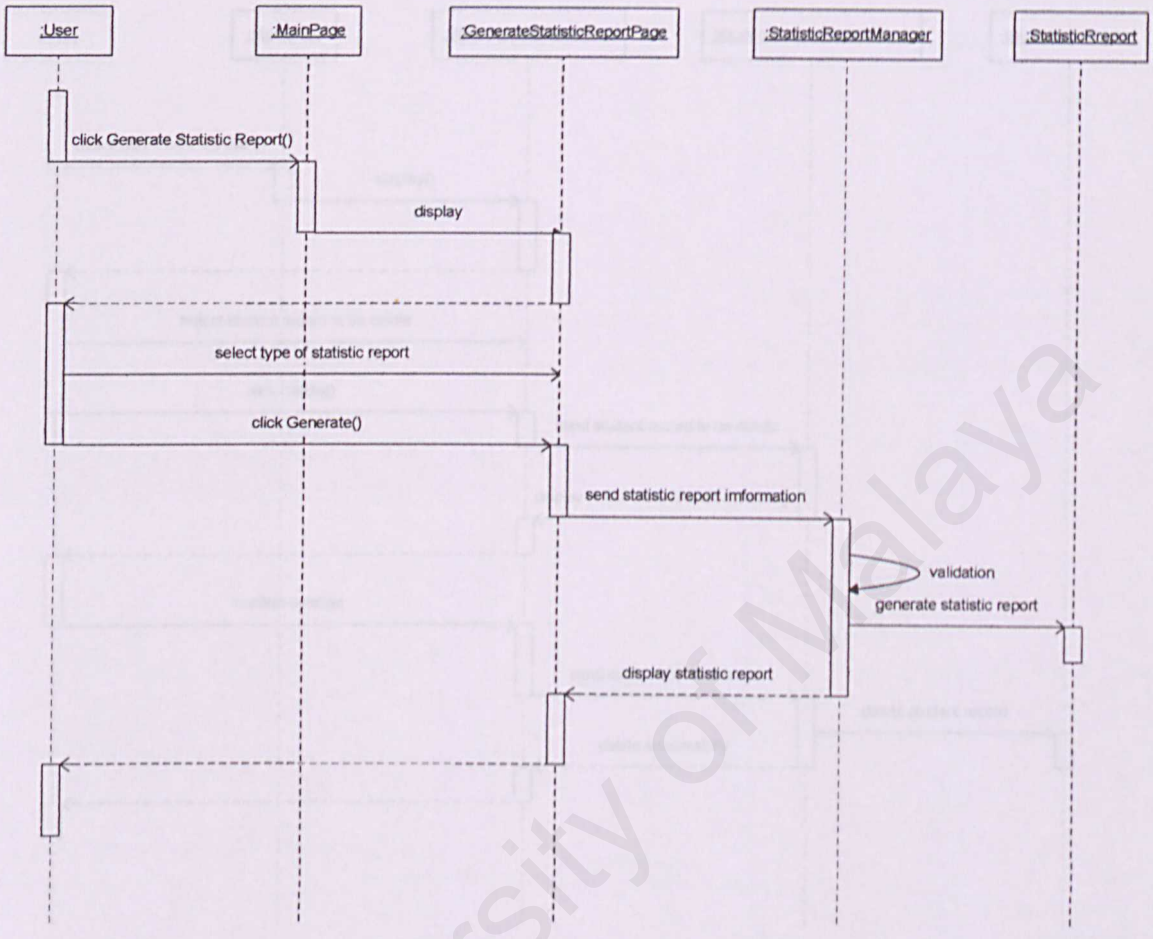


Figure 5.5: Sequence Diagram of "Generate Statistic Report" use case.

Delete Student Record

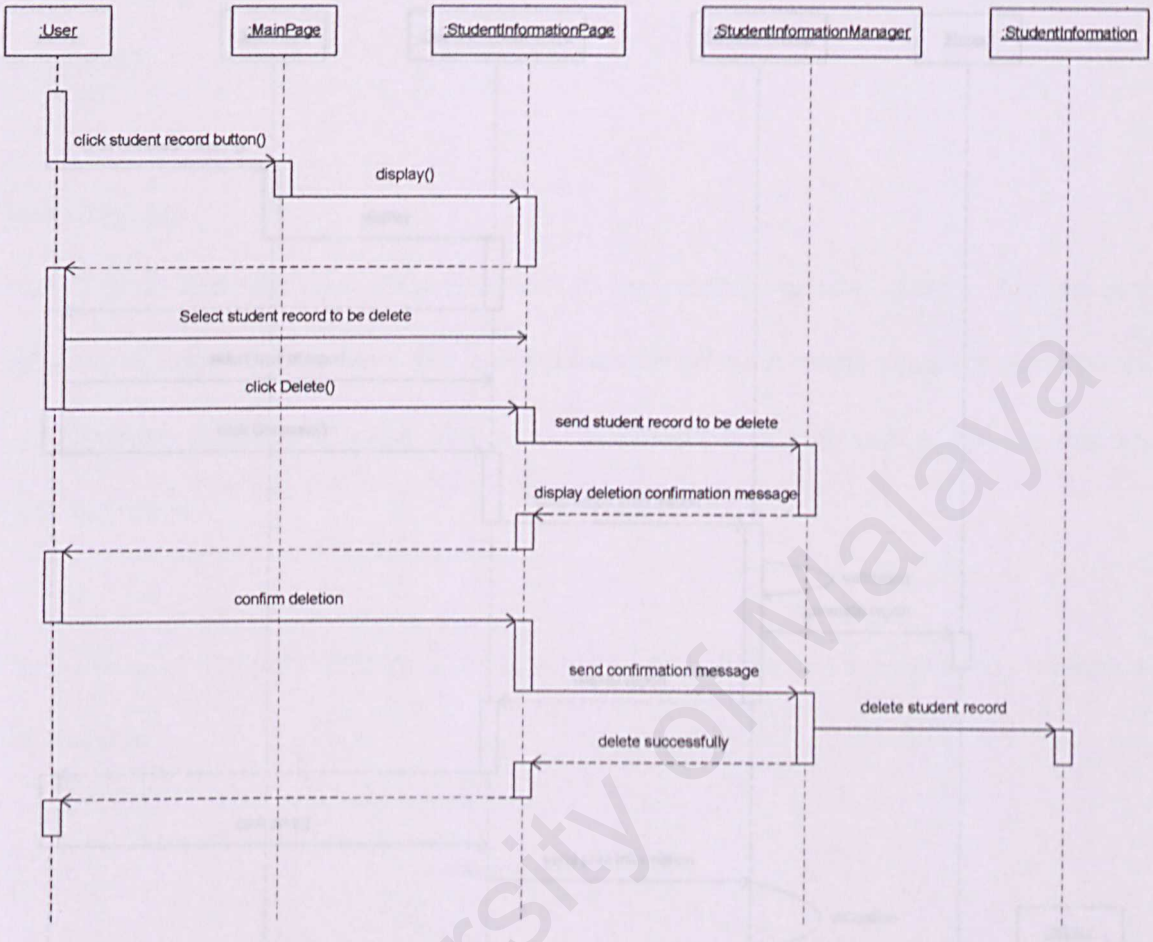


Figure 5.6: Sequence Diagram of "Delete Student Record" use case.

Print Report

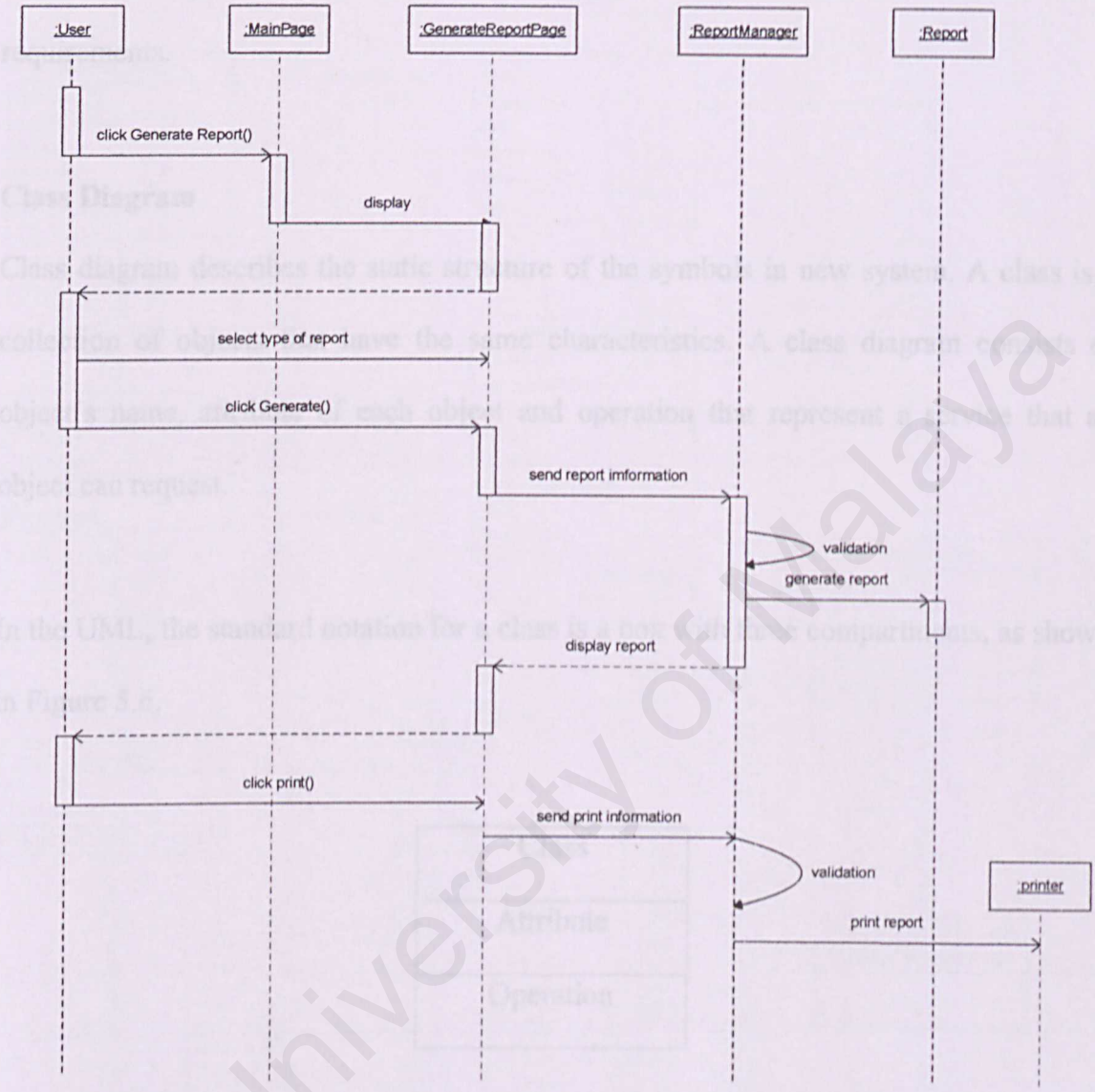


Figure 5.7: Sequence Diagram of "Print Report" use case.

5.3 Database Design

Database design is the process of developing a database that will meet a user's requirements.

Class Diagram

Class diagram describes the static structure of the symbols in new system. A class is a collection of objects that have the same characteristics. A class diagram consists of object's name, attribute of each object and operation that represent a service that an object can request.

In the UML, the standard notation for a class is a box with three compartments, as shown in Figure 5.6.

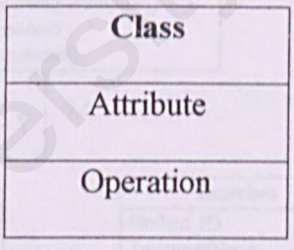


Figure 5.8: UML Class Notation

Class Diagram

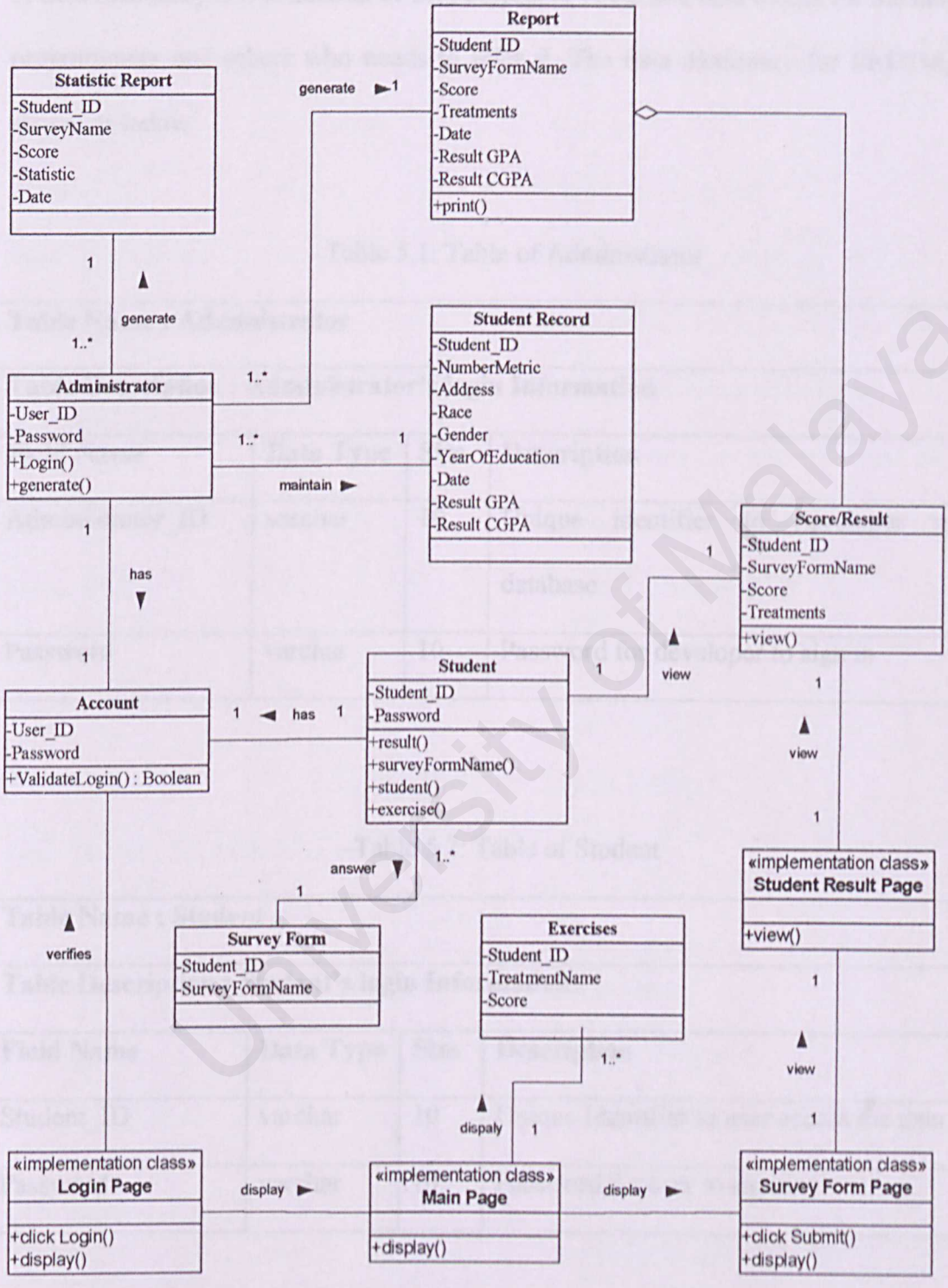


Figure 5.9: Class Diagram of EMPHASIS

Data Dictionary

A data dictionary is a collection of data objects or items in a data model for the benefit of programmers and others who needs to refer it. The data dictionary for EMPHASIS is shown as below:

Table 5.1: Table of Administrator

Table Name : Administrator			
Table Description : Administrator's login Information			
Field Name	**Data Type**	**Size**	**Description**
Administrator_ID	varchar	10	Unique identifier to developer modify database
Password	varchar	10	Password for developer to sign in

Table 5.2: Table of Student

Table Name : Student			
Table Description : Student's login Information			
Field Name	**Data Type**	**Size**	**Description**
Student_ID	varchar	10	Unique Identifier to user access the data
Password	varchar	10	Password for user to sign in

Table 5.3: Table of Report

Table Name : Report			
Table Description : Information of report			
Field Name	**Data Type**	**Size**	**Description**
Student_ID	varchar	10	Identify each student
SurveyFormName	varchar	50	Data user do the survey questions
Score	varchar	8	Score given
TreatmentName	varchar	50	Name of differences exercises
Date	date	10	Time to answer the survey questions
Result GPA	float	8	Student's result for that semester
Result CGPA	float	8	Student's average result

Table 5.4: Table of Statistic Report

Table Name : Statistic Report			
Table Description : Information of statistic report			
Field Name	**Data Type**	**Size**	**Description**
Student_ID	varchar	10	Identify each student
SurveyFormName	varchar	50	Data user do the survey questions
Score	varchar	8	Score given
Statistic	varchar	50	Name of differences statistic
Date	date	10	Time to answer the survey questions

Table 5.5: Table of Score/Result

Table Name : Score/Result			
Table Description : Information of score/result			
Field Name	**Data Type**	**Size**	**Description**
Student_ID	varchar	10	Identify each student
SurveyFormName	varchar	50	Data user do the survey questions
Score	varchar	8	Score given
TreatmentName	varchar	50	Name of differences exercises

Table 5.6: Table of Treatments

Table Name : Treatments			
Table Description : Information of Treatments			
Field Name	**Data Type**	**Size**	**Description**
Student_ID	varchar	10	Identify each student
TreatmentName	varchar	50	Data user do the exercises
Score	varchar	8	Score given

Table 5.7: Table of Students Record

Table Name : Students Record			
Table Description : Information of Students Record			
Field Name	**Data Type**	**Size**	**Description**
Student_ID	varchar	10	Identify each student
NumberMetric	varchar	10	User number metric
Address	varchar	30	Student's home address
Email_address	Varchar	30	Student's email address
Race	varchar	1	Student's race
Gender	varchar	1	Student's gender
Year of education	varchar	1	The year that student in
Date	date	Number	Date/time to answer the survey questions
Result GPA	float	8	Student's result for that semester
Result CGPA	float	8	Student's average result

Table 5.8: Table of Survey Form

Table Name : Survey Form			
Table Description : Information of Survey Form			
Field Name	**Data Type**	**Size**	**Description**
Student_ID	varchar	10	Identify each student
SurveyFormName	varchar	50	Data user do the survey questions

5.4 Interface Design

User interface design is one of the important processes in designing and using the interface of the system. Interface design focuses on how information is provided to and captured from users. It is the process of defining the manner in which humans and computer exchange information.

Adopted Principles

The interactive interface is an important requirement for interactive system. The interface is the system for most users. How well or poorly an interface designed, it stands as the representation of the system. The interface must help users to get the information they need in and out of the system by addressing the following principles:

Consistency

The system should be consistent, which means use a consistent format for menu selection, a consistent label, a standard abbreviation and functions display. However, the overall system should look, act and operate the same throughout in order to reduce the user's learning time. All comparable operations activated should in the same way.

User Friendly

The system must be considered as an attractive and easy-to-use application with the provided user-friendly interface with windows, icon, menu and pointing feature. Forms are designed to ease the users to input data. Menu-driven and combo box selection will

help the user to use the system with more convenient. Steps involved in completing a task must not be too complicated. This will reduce the user learning time on the system.

Efficiency

All the movement of eyes, hands and other control movement should be minimized in the interface design.

Clarity

The interface employs familiar concepts and uses a language that is clear to users. The interface should be clear in visual appearance, concept and wording. The visual elements on the screen are understandable and the words and text being used are simple. All controls, button and icons are labeled clearly.

User Interface for EMPHASIS

Below are a few example of system interfaces draft.

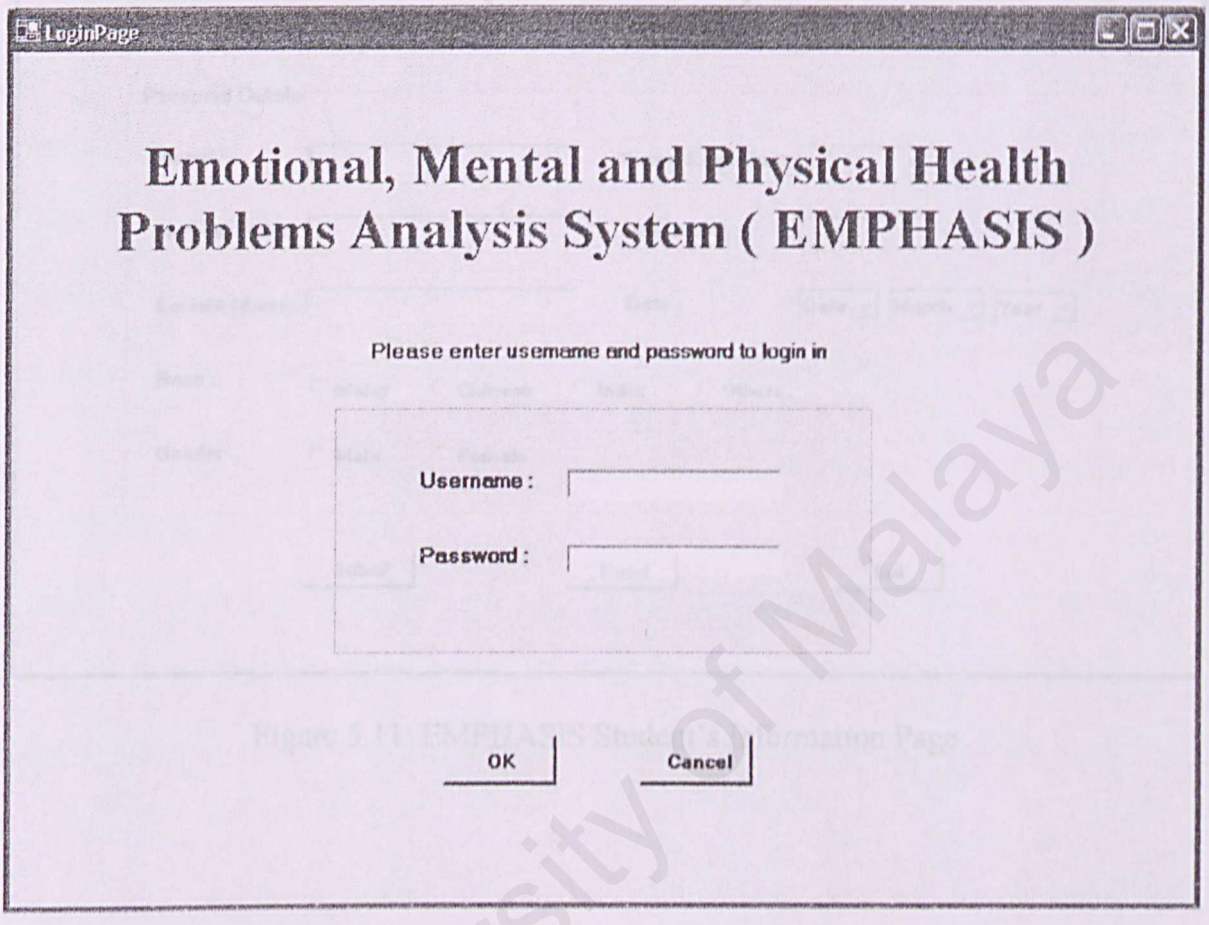


Figure 5.10: EMPHASIS Login Page

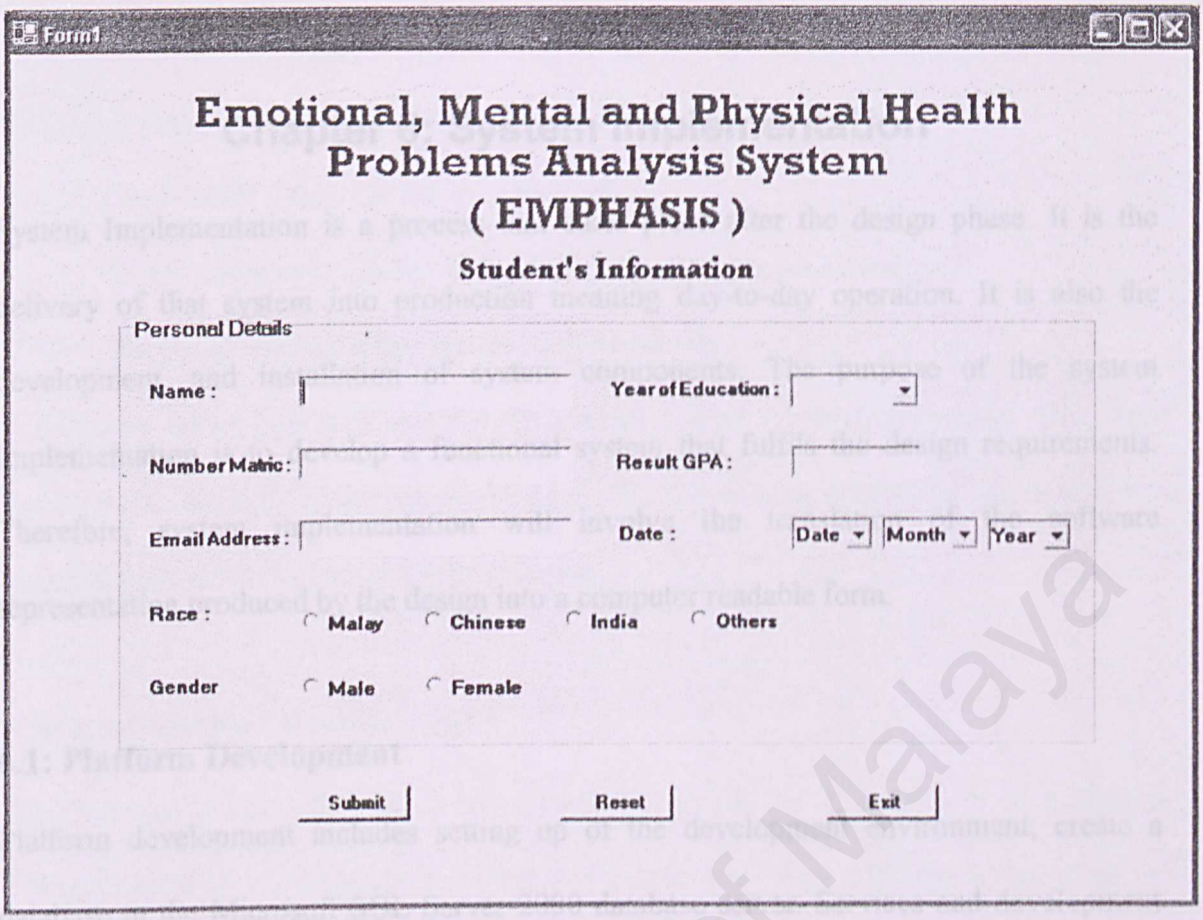


Figure 5.11: EMPHASIS Student's Information Page

Chapter 6: System Implementation

System Implementation is a process that takes place after the design phase. It is the delivery of that system into production meaning day-to-day operation. It is also the development, and installation of system components. The purpose of the system implementation is to develop a functional system that fulfils the design requirements. Therefore, system implementation will involve the translation of the software representation produced by the design into a computer readable form.

6.1: Platform Development

Platform development includes setting up of the development environment, create a database in the Microsoft SQL Server 2000 database server. Services and development tools installations are the very first step before starting off with any development work.

6.1.1: Operating System

The development platform or operating system used for this system is Microsoft Windows XP Professional. To install the Windows XP Professional, the CDROM need to be set as first boot disk and the installation is proceed by following the step by step instructions appeared in the installation's menu interface.

6.1.2: Database management System

Database management system that used to store, retrieve or delete data of EMPHASIS is Microsoft SQL Server 2000. The installation is relatively simple with steps by steps instruction from the provided installation interface.

To ensure that the SQL Server 2000 has been installed:

1. Click '*start*' follow by the '*program*' click.
2. Go to '*Microsoft SQL Server*' and click the '*Enterprise Manager*'
3. '*Microsoft management console*' will be display.

A database named emphasis was created after successful installation process. Then table are create accordingly to the database design. The tables were created for the database to maximize the performance of database server.

6.2: Development Environment

Development environment has a significant impact on the development of a system. Using suitable and appropriate hardware and software not only will help to speed up the system development but will also determine the success of the project. The hardware and software tools used to develop the entire system are as below:

6.2.1: Hardware Requirement

Below is the hardware specifications used to develop the system.

Table 6.1: Hardware Requirement

Processor	Intel Pentium 4 processor 1.8 GHz or higher
RAM	Minimum of 128MB/ Recommended 256MB
Hard disk	2.5GB and above
Others	52x CDROM 1.44MB Floppy Disk Drive

	Windows Compatible Keyboard and Mouse 15" Digital Monitor

6.2.2: Software Requirement

The following is a list of the software tools used in the development of this system.

Table 6.2: Software Requirement

Software	Description
Window XP Professional	Operating system.
Microsoft Visual Studio .NET 2003	Main tool to create the Application Forms, Crystal report, Dataset, Class file and Module File.
Microsoft SQL Server 2000	Database management system.
Adobe Photoshop 7.0,	Image design and creation
Microsoft Word 2000	Writing documentation

6.3: Program Developed and Coding

Basically, program development process that is followed by EMPHASIS consists of the following 5 steps:

6.3.1: Program Development Process

i. Review the Project Documentation

The project documentation was prepared in previous phases needs to be reviewed frequently to provide a better understanding of the work need to be done during the coding phase and ensure the program is according to defined specification.

ii. Design the Program

The program design caters what exactly the program can accomplish and what the program should accomplish. This is the process that involved a lot of technical planning and design to develop a logical solution to the programming problem.

iii. Code the Program

Coding the program is a process of translating the program design into the program instruction that is readable by the machine.

iv. Test the Program

In program development stage, the testing involved are unit testing, integration testing and user acceptance testing. Issue on testing will be evaluated in details next chapter.

6.3.2: Coding Approach

The Top down coding approach begins with the coding of the higher level modules first and leaving the lower modules called skeleton form to be filled in later. The lower modules are just a shell, with an exit. In the other words, as the higher module is being coded, references are made to the lower modules as if their coding is available.

Coding to connect to database

A data provider in the .NET Framework serves as a bridge between an application and a data source. A data provider is used to retrieve data from a data source and to reconcile changes to that data back to the data source. The SQL Server .NET Data Provider provides connectivity to Microsoft SQL Server 2000 using the SqlConnection object. So, this object is used to connect to the database. The SQL Server .NET Data Provider

supports a connection string format that is similar to the OLE DB (ADO) connection string format.

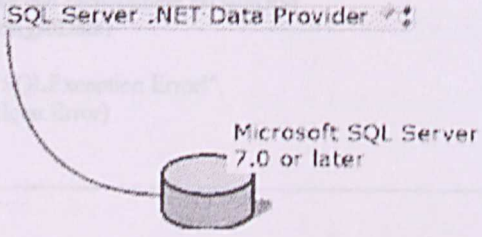


Figure 6.1: SQL Server .NET Data Provider

Table 6.3: Create a New Connection using SQL Server .NET Data Provider

```
Import the namaspaces.
Imports System.Data
Imports System.Data.SqlClient
---
Built the SQL and connection strings
Strconn="Initial Catalog=emphasis;Data Source=""KOLEJ-F1CB2OFDD""; & "User
ID=sa;password=;"
```

The DataSet object is central to supporting disconnected, distributed data scenarios with ADO.NET. The DataSet is a memory-resident representation of data that provides a consistent relational programming model regardless of the data source.

Table 6.4: Bind to a datagrid for display

```
Bind to a datagrid for display
Try
'The SqlConnection class allows youto communicate with SQL Server and DataTable.
    Dim myConnection As New SqlConnection(myConnection)

'A SqlCommand object is used to execute the SQL commands.
    Dim mycmd As New SqlCommand(strMySQL,myConnection)
    Dim mySqlDataAdapterAs NewSqlDataAdapter(mycmd)
    Dim mydsStudent As NewDataSet()

' The SqlDataAdapter is responsible for using a SqlCommand object to fill a DataSet.
    grdDatar..CaptionText ="Customer"


'Set the DataGrid caption, bind it to theDataSet, and then make it
'Visible
```

```
' Notice here that instead of using theDataSet table name,
' "Students", the alternate syntax oftable index is used.
    grdData..DataSource =mySqlDataAdapter.Tables(0)

' Settings to the DataGrid Styles,which will call the procedure
    setMyDataGridTableStyleProperties and theparamete asDataGrid
    setMyDataGridTableStyleProperties(grdData)
grdData.Visible = True
MessageBox.Show(sqlExc.ToString, "SQLException Error!",
MessageBoxButtons.OK,MessageBoxIcon.Error)
End Try
'
```

Table 6.5: Event handling such as click button for pages connection

```
Event Handlers such as click button for pages connection
Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs)
Handles Button1.Click
        Dim frm As New frmstudentsdetail
        frm.Visible = True
        frm.Dock = DockStyle.Fill
        MainPanel.Controls.Clear()
        MainPanel.Controls.Add(frm)

    End Sub
```

6.3.3: Style Adopted

- **Maintainability** – the code are well organized.
- **Readability** – Codes are formatted to enhance understanding. Several strategies are used in preserving readability in the codes, including meaning variables and labels names, comment and proper identification.
- **Reusability** – It is an important principle as a method for improving product quality while reduces the coding time as well as the testing and documentation time. Classes' components are created to be reused in subsequent and related applications.
- **Robustness** – The system has the ability to validate systems input to ensure correct data is provided in order to protect system integrity.

6.3.4: Program Documentation

The coding style plays an important role in determine the readability and maintainability of the source codes. With a clear and systematic coding style, it helps programmer to read and understand the codes easier when maintaining and debugging the system.

6.3.5: Module Implementation

All the modules of the EMPHASIS are listed as follow:

Student Information

User need to enter his/her personal information, email address, to add into the database.

Login

The user will be request to enter his/her username and password that have been given to login into the system.

Edit student Profile

User of the system can edit his/her personal profile with latest information and submits the updated personal information to the system database.

Survey Form

User can select multiple test to test their health problems.

Treatments/Exercises

User can retrieve a treatments or exercises base on what health problem they face.

Generate report

Administrator can view the student report base on what level of health problem, what kind of treatment that provided and the other essential things.

Generate Statistic report

Administrator can generate the latest information in form of statistic that include graph or bar.

Chapter 7: System Testing

Testing is an importance step in the system development cycle. Testing is any activity aimed at evaluating an attribute or capability of a program or system and determining that it meets its required results. It is also performed to find faults and software failure.

Basically, testing is conducted:

1. To ensure a program corresponds to its specification.
2. To uncover defects in the software.
3. To make sure the software doesn't do what it is not supposed to do.
4. To have confidence that the system performs adequately.
5. To understand just now far we can push the system before it fails.
6. To understand the risk involved in releasing a system to its users.

The main purpose of system testing is to ensure the quality of EMPHASIS by verifying and validating the EMPHASIS. Verification is carried out to ensure that all the modules in the system are being developed follow the right procedures while validation is to make sure the system has built according to the requirements and as stated in the requirement document.

All the modules and functions of EMPHASIS are undergoes unit testing before they are integrated as a system. Integration testing will be carried out to ensure the seamless integration among the system module. After integration, this system was tested again as a whole complete system and finally, the user acceptance testing will be carried out.

7.1: Type of Faults

Faults can be categorized into three groups:

1. **Algorithmic faults**

   Occur when a program algorithm or logic does not produce the proper output for a given input because something is wrong with the processing steps. The faults are something easy to spot by reading through the program (called desk checking) or by submitting input data from each of the different classes of data that will expect the program to receive during its regular working.

2. **Syntax faults**

   Syntax faults can be checked while parsing for algorithmic faults. This will ensure that the construct of programming language is used properly.

3. **Documentation faults**

   Documentation faults occur if the documentation does not match what the application does, and such faults can lead to other faults later because of wrong implementation.

7.2: Testing Strategies

Several testing stages/strategies carry out to complete a system testing phase. The testing strategies are shown as follow:

7.2.1 Unit Testing

Unit testing is done to discover error in each module. Each unit should be tested

individually and in isolation by exercising its inputs and observing its outputs or behavior. It may also be possible for the unit to be tested using the facilities available in the development environment (such as stepping through the statements of code using a debugger). Throughout the development of the system, the unit testing will be performed after the development of each component.

Test Objectives

The objective of Unit Testing is to

- Ensure that reliable program units are produced that meet their requirements.
- Testing the boundary condition to ensure that the units are working properly at the boundary values.
- Testing the interface to ensure that the information flows in and out properly.
- Testing the error paths to ensure that it operate properly

7.2.2: Module Testing

A module testing is a collection of dependent components that encapsulates related components only. Therefore, it is possible to test a module without other modules. Module testing is typically conducted by the development team and involves the independent observation of the testing process. Module testing may also be termed Integration or Link Testing.

Test Objectives

The objective of Module Testing is to demonstrate that the modules which comprise the AUT interface and interact together in a correct, stable and coherent manner prior to System Testing.

7.2.3: Integration Testing

Integration Testing is the process of verifying that the system components will work together as describes in the system and program design specification. This phase of testing involves testing collection o modules in this application that had been integrated into sub system. The sub system test procedures should concentrate on the detection of interface error by vigorously exercising those interfaces. System Integration testing is typically conducted by the testing team under the supervision of test team leader, and monitored by an Independent Test Observer. System Integration Testing also termed Compatibility Testing, or simply Integration Testing.

7.2.4: System Testing

The objective of system testing is to ensure that the system does what the customer wants it to do. System testing is carried out on the entire integrated system as one unit to ensure that the entire system is validated. It is also ensure and verifies that the system is functioning properly and all design and development objective are met. There are several steps were carried out to test this system, which are shown as follow:

1. **Functional testing:** Checks that the integrated system performs its functions as specified in the requirements. Functional testing performed in a carefully controlled situation.
2. **Performance testing:** Compares the integrated components with the nonfunctional system requirement after the testing is completed, these requirements including security, accuracy, speed, and reliability, constrain the way in which the system functions are performed.

3. **Acceptance testing:** Allow customers to test the system.

7.2.5: User Acceptance Testing

In user acceptance testing, user is required to test the EMPHASIS to ensure the system meets its requirement before it is formally delivered to the end user.

From this testing, user can test the performance of the system and the operation of each function. Thus, this will develop and increase their understanding of the system when the complete system is being implemented. Some test cases will also have to bring out to introduce the system so it will be more reliable and efficiency when it is tested. Any new or additional requirements from the user will be considered in this test.

Chapter 8: System Evaluation

System evaluation is a process of evaluating the capability and usability of the developed system. It is a process that occurs continuously, drawing on a variety of sources and information. Evaluation is shown as a path of this final phase of the system development life cycle. The process involves several steps includes evaluation by end users, identifying the system strength, system limitation and future enhancements. In this chapter, it also highlighted the knowledge gained, the problems encountered during the development of the system and the solutions taken to overcome these problems.

8.1: Problems Encountered and Solutions

During the implementation of the system, several problems had been encountered and need to be solved in order to continue the development. These problems along with solution approaches are highlighted in the following section.

Integration problem

I had use the bottom up approach in developing the system where modules of the system are developed separately and integrate it when all the modules are finish developed. However, I had encountered the integration problem such as error in passing query string, session problem and some link problem.

To solve the integration problem, I use the debugger provided by the Microsoft Visual Studio .NET 2003 to debug the system. Besides that, I try to integrate the system one by one. After a module is successfully been integrated and test to be free of bugs, then

another module will integrate and test the correctness of the system. The process repeat until all the modules are successfully been integrated.

Lack of Mastery of VB.NET Language

Using the language is very challenging as the VB.NET is the new programming language and this is the first time I approach to this language. I had encountered the problem of mastering the VB.NET language in a short time especially the language syntax and commands. Besides that, I also not familiar with the VB.NET development environment (Microsoft Visual Studio .NET 2003) such as how to manage the coding and use the tool provided by Ms VS.NET.

To master the VB.NET language, I surf the Internet to find the references and sample coding for these languages as the as the guidance for system development. Additional literature was acquired through reference book to gain better understand about the syntax and command of the VB.NET. Discussion with course mates is also one of the solutions for the numerous doubts.

Lack of Hardware and Software Configuration Knowledge

All the software and hardware needed to develop the system need to be configured before the start of the development phase in order to process the system implementation smoothly. For example, the database connection needs to be configured to connect the system to the database. All of these issues become the problem for me as the first I using all these development tools.

These problems have been overcome by looking the similar problems and solution or help files and reference from the Internet. Besides, I also inquire the help from course mates who is using software.

8.2: System Strengths

During the development of this project, several system strengths were identified.

Easy to Use

The EMPHASIS is a user friendly system. The entire interfaces and command buttons, which was created, is easy to understand and use. For example, a user can predict that clicking on a command button label with DELETE in program will delete the records from database. This will decrease the time for new users to learn how to use this new system. Moreover, the most important is reducing their reluctant to use the system.

Secure Security

Administrators need to login in order to view all the students profile, add, modify or delete record and view the profile. Users need to insert their login in order to taking the survey questions. The user login is under the control of the system, thus all unauthorized users will fail to access to the system.

Real time updated daily processing

This system will automatically update the records in database once the users add, modify or delete the records. The system will automatically calculate the total score of the questions.

Reliability

Inputs of the user to the system are validated and verified to prevent errors caused by the invalid input. If there is an invalid input, error messages that specify the error will be prompted to inform the user about the error. Besides that, database that contains all the essential and important information will be back-up automatically at a specific interval.

8.3 System Limitation

Lack of Advance Security Features

There is no data encryption implemented in this system, especially user input confidential information and query string. Besides that, user is not restricted to three times attempting to login into the system. Therefore, the system is vulnerable to threat of hacking or other cyber crime.

8.4 Future Enhancements

Further development and many new ideas have come about while the system was being implemented. Therefore some functions and services need to enhance into the system to make it more comprehensive and functional in the future.

8.5 Knowledge and Experience Gained

A lot of valuable knowledge and experience that are gained in developing EMPHASIS, there are listed below.

Development Tools Knowledge

By developing the EMPHASIS, I had the opportunity to explore the VB.NET

programming language and other programming related tools such as Microsoft SQL Server 2000. Reading about the software is not enough to understand its characteristics. I had discovered more advance technology that can be deployed by the language VB.NET which indeed cannot be gained from the books only. I also had had better understanding on how to manipulate the SQL Server and crystal report.

Understand UP and the importance of all phases in SDLC

By developing the Emphasis, I had to go through all the development phase in the SDLC such as requirement gathering, system analysis, system design, system implementation and system testing. All the phase in the SDLC had to be conducted in a proper way to eliminate cascaded value added error and minimize rework of the system. In additional, I had also known how to develop a system by implementing the Unified Process (UP) methodology in software development life cycle.

Project Planning Skills

Before developing EMPHASIS, all the software development steps and project planning are just a theory to me. But during the development of EMPHASIS, I have noticed the important of good planning and had real chance to practice and implement all the knowledge and theory that learned before about software development and project management. Good planning will minimize the risk of getting wrong conceptual of the project and makes a developer estimates what can be able to be achieved.

8.6: Reviews and Goal

At the final stage of the project, there were certain expectations on what would be

achieved. The following is the expectations that have achieved:

Expectation Achieved

In overall, the system had fulfilled the expectations stated by the project. Basically all the functions of the system was designed and implemented and have been achieved successfully. The system also is eligible for future growth and maintenance. The non-functional requirements such as reliability, usability, maintainability and efficiency also are met by the system.

Objectives Achieved

The project had successfully created a system that provided an alternative convenient method for users to help them in maintain their emotional, mental and physical health. As a conclusion, the above statements have clearly point out that the objectives to establish the system had been achieved.

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Appendix I

Faculty Of Computer Science And Information Technology, University Malaya 2004/2005

Survey on Emotional, Mental and Physical Health Among the Computer Science Student in University of Malaya

Personal Profile:

Name : _____

Matriculation number : _____

Email address : _____ Date : _____

Instruction : Please tick (✓) or specify otherwise:

Gender : ☐ Male ☐ Female

Race : ☐ Malay ☐ Chinese ☐ Indian ☐ Others, please specify: _____

Introduction :

The purpose of this survey is to understand what exactly it is that disturb our inner equilibrium, looking at the emotional, mental and physical health perspectives. There are two section in this survey, section A and section B.

Section A :

This section is to help you to know what kind of problems that cause your emotional, mental and physical health.

If your answer to each of following statement is Yes, please tick (✓) in the box, otherwise put a cross (✗).

Is your emotional health ok?

1. I'm often in the bad mood. ---------- ☐
2. I find it difficult to control my anger. ---------- ☐
3. I find it hard to say 'no', even when someone makes unreasonable demands.-------- ☐
4. I am a jealous person. ---------- ☐
5. I'm easily hurt when I'm criticized, even if the criticism is constructive. ---------- ☐
6. It upsets me greatly when I fail at something, no matter how unimportant it is. ----- ☐
7. I feel I'm losing control over my life. ---------- ☐
8. I feel anxious and down a lot. ---------- ☐
9. I can't let go of a past event. ---------- ☐
10. I feel unhappy about lost of things in my life. ---------- ☐

Is your rational mind in working order?

11. I'm so emotional that I often find it hard to make rational decisions. -------- ☐
12. I constantly change my mind. I'm a true ditherer. ---------- ☐
13. In certain situations, I panic and I am unable to think rationally. ---------- ☐
14. I find it difficult to follow a train of thought when I need to take in new information. ☐
15. I feel confused and disorientated. ---------- ☐
16. I find it difficult to follow instructions. I simply cannot remember the order of things. ---------- ☐

How good is your physical health?

17. I feel constantly tired. ---------- ☐
18. Whenever there is a bug going around, I'll catch it. ---------- ☐
19. I have been plagued by various health problems for a long time. ---------- ☐
20. I have a chronic condition which doesn't get better. ---------- ☐
21. I have a chronic condition which is getting worse. ---------- ☐
22. I have annoying physical symptoms (ticks, twitches, shooting paints, and so on) that keep recurring. ---------- ☐
23. The quality of my skin and/or hair has deteriorated. ---------- ☐
24. My breathing feels different in an unpleasant way. ---------- ☐
25. I feel unwell but can't say exactly how or why. ---------- ☐
26. One (or several) of my body processes (menstruation, bowel movements, digestion, for example) has not been working properly for a while. ---------- ☐

Meaning for difficult words:

rational – consistent with or based on reason; logical:
ditherer – the person who are nervously irresolute in acting or doing.
disorientated – loss all of sense of direction
bug – annoy; irritate
plagued – caused of trouble or disaster.
chronic – continual, going on for a long time.
ticks – to function characteristically or well:
twitches – a sudden pulling
bowel movements – waste matter discharged: faeces

Section B:

In this section you will be tested on those issues in your life that linger on from the past and have been building up into stumbling-blocks that are holding you back today. It also helps you to define which issues are problems that occur in your life pattern that include thoughts, mental, emotional and physical pattern.

Part 1 ~

In this part you will be tested on life patterns that influence your emotion.
Write your grade down in the box provided based on the following *Grading Scheme*.

Grading Scheme

Grade 5 : That's exactly how I feel!
Grade 4 : I frequently feel like this and it makes me very anxious.
Grade 3 : I sometimes feel like this and it bothers me.
Grade 2 : I sometimes feel like this but it doesn't bother me.
Grade 1 : I rarely feel like this.
Grade 0 : This thought would never cross my mind.

1. When someone else is in a bad mood, it affects my own mood in a negative way. ----- ☐
2. I don't feel that I have control over my life. ---------- ☐
3. I doubt very much that I will ever excel at anything. ---------- ☐
4. When something goes wrong during the day, it depresses me for a long time after. ---- ☐
5. My life is ruled by my sense of duty towards family, friends or employer. ---------- ☐
6. I'm expecting my future to be as unsatisfactory as my past. ---------- ☐
7. I have developed thought patterns that I dislike but cannot stop. ---------- ☐
8. I have behavioural patterns that I dislike but cannot stop. ---------- ☐
9. My daily life is at the mercy of my feelings. My feelings are unpredictable. ---------- ☐
10. I seem to do all the right things but never get the results I want. ---------- ☐
11. I have habits that make me feel a failure. ---------- ☐
12. I am unable to say 'no', even when others make demands that are clearly unreasonable. ---------- ☐
13. When certain situations occur in my life, they trigger great fear in me, even though other people don't seem to be bothered by the same situation. ---------- ☐
14. It is important to me to do everyday things *always* the same way. ---------- ☐
15. I hate conflict and will avoid it at all cost. ---------- ☐
16. I'm fearful of most things in life. ---------- ☐
17. I feel that others are better than me. ---------- ☐
18. I suffer from a particular health problem that keeps recurring. ---------- ☐

19. There are things I could do to improve my life situation, but I'm not doing them. ------ ☐

Part 2 ~

In this part, we are looking for past events that influence on your mind, body and spirit. Write your grade down in the box provided based on the following *Grading Scheme*.

Grading Scheme

Grade 5: This statement applies to me 100 per cent.
Grade 4: This statement reflects how I feel quite often.
Grade 3: I sometimes feel like this and it upsets me.
Grade 2: I sometimes feel like this but it doesn't bother me.
Grade 1: I rarely feel like this.
Grade 0: This statement does not apply to me.

1. I feel compelled to think about certain past events in my life, even though this upsets me. ---------- ☐
2. I'm scared that I will go on having the same negative experiences that I had in the past. ---------- ☐
3. I have developed thought patterns that upset me. ---------- ☐
4. Although I hated the way I was treated by others in the past, I seem to be treating others in the same unacceptable way now. ---------- ☐
5. I have done something in the past that made me lose all self-respect. ---------- ☐
6. I have omitted to do something in the past that I should have done. This omission has blighted my life since. ---------- ☐
7. I often have unexpected flashbacks about a past traumatic event. ---------- ☐
8. I cannot remember anything before the age of ten. ---------- ☐
9. I have a chronic illness and now I feel guilty because someone said that I have attracted the illness through negative thoughts. ---------- ☐

Meaning for difficult words:

linger – be late or slow in going away.
anxious – strongly wishing to do or get something.
excel – do better than; be very good.
trigger – set an action or a process in motion
blighted – spoil
traumatic – distressing or unpleasant

Part 3 ~

In this part ,we are looking at the thoughts. This thoughts evoke feelings, and feelings trigger physical and mental responses.
Write your grade down in the box provided based on the following *Grading Scheme*.

Grading Scheme

Grade 5: This is exactly the way I think.
Grade 4: I often think like that.
Grade 3: I sometimes think like that and it bothers me.
Grade 2: I sometimes think like that but it doesn't bother me.
Grade 1: I rarely think like that.
Grade 0: This thought would never occur to me.

1. I would rather be anyone else but myself. ---------- ☐
2. I have brief moment where I see disturbing pictures in my mind which do not seem to relate to anything I have experienced in my life so far. ---------- ☐
3. I have been trying to think positively over a long time, but somehow, it doesn't work for me. ---------- ☐
4. When I look back over my life and think of where I am today, I am dissatisfied. ------ ☐
5. My thoughts are automatically negative most of the time. ---------- ☐
6. I cannot see the future. ---------- ☐
7. I don't think I can visualize. I just don't have any imagination. ---------- ☐
8. I don't like who I have become. ---------- ☐
9. I don't think others like me. ---------- ☐
10. I dislike myself and I resent others. ---------- ☐
11. Whatever anyone else says about me stays in my mind for years afterwards, but only if it was something negative. ---------- ☐
12. I feel it is important to hide my inadequacies from others around me. If they knew the real me, they would lose interest or reject me. ---------- ☐

Meaning for difficult words:

brief moment – for a short time
resent – feel bitter or angry at.
inadequacies – not enough

~~Thank you for your Participation in this Survey.~~

Appendix II

WHAT ARE YOU DOING TO HANDLE STRESS?

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To assess your coping skills, check off each statement that applies to you.

☐	1. I tune out the demands.	M
☐	2. I take a drink (or pill, or smoke) at night to unwind.	M
☐	3. When I am faced with a difficult problem I try to break it down into smaller, more manageable bits.	PS
☐	4. I take a deep breath and let it out slowly when I feel particularly tense.	R
☐	5. When I have to get something done I will skip lunch.	M
☐	6. I know how to delegate tasks to others.	TM
☐	7. When I catch myself saying unhelpful things to myself (e.g. "I'll never get it exactly right.") I am able to change those thoughts.	C
☐	8. If I get really busy or have a deadline, I stick with it even if it means losing some sleep.	M
☐	9. Sometimes I just say "no"	A
☐	10. I get angry when the demands become too great.	M
☐	11. I deal with stress by increasing my pace of doing more than one thing at a time.	M
☐	12. I can sometimes laugh at myself or others when the situation becomes tense.	H
☐	13. I try to think of many alternative ways of handling a problem.	PS
☐	14. Exercise helps me blow off steam when I am stressed.	E
☐	15. I talk with my friend/partner/relative when I'm feeling stressed.	S
☐	16. I take something (e.g. a cup of coffee, a pill) to help me focus and get the job done.	M

☐ 17. I treat myself with my favorite food when I am feeling stressed. M

☐ 18. When the demands become overwhelming, I just forget to do it. M

☐ 19. I try to live one day at a time, without unduly worrying about the future or having regrets about the past. C

☐ 20. I take a break if I start to feel too tense. R

☐ 21. I am able to speak openly about my feelings when angry or worried. A

☐ 22. I prioritize my daily activities so I don't feel like I have to be doing everything all of the time. TM

☐ 23. I live by the philosophy of "if you wait long enough to respond to something it will no longer need a response." M

☐ 24. I often put other people's needs before my own so they will not get angry. M

The letters in the right hand column indicate the type of coping skills you are using:

M Maladaptive
R Relaxation
E Exercise
TM Time Management
C Changing Cognitions
A Assertive Communication
PS Problem-Solving
H Humor

Are You Stressed?

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Please respond to the following questions with:
1 = never
2 = rarely
3 = sometimes
4 = fairly often
5 = very often

In the last month, how often have you:

----- Been upset because of something that happened unexpectedly?
----- Felt unable to control the important things in your life?
----- Felt nervous and stressed?
----- Dealt successfully with irritating life hassles?
----- Felt you were effectively coping with important changes in your life? ___
----- Felt confident about your ability to deal with your personal problems? ___
----- Felt that things were going your way? ___
----- Found that you could not cope with all the things you had to do?
----- Felt on top of things? ___
----- Been angered because of events that were outside your control?
----- Found yourself thinking about things that you have to accomplish?
----- Been able to control the way you spend your time? ___
----- Felt difficulties were piling up so high that you couldn't overcome them?

___ TOTAL LEFT COLUMN POINTS (Not counting the 6 right column items)
___ TOTAL RIGHT COLUMN POINTS

___ TOTAL POINTS

Scoring
Reverse the number of points for each item with a ___ in the right hand column. That is, if you put a 5 in the left hand column for that item, record a score of 1 in the right hand column. If you put a 4 in the left hand column for an item, record a score of 2 in the right hand column. Scores of 3 remain the same.
Add up your scores in the left column only for those items that do not have a ___ in the right column. Add up your scores in the right column and then put your left hand column and right hand column scores together to get a total number of points.

A total score of 30 or more means you are stressed to the point that you might consider doing something about it.

Appendix III

Treatment/Exercise Record

Name: _____

Matriculation No.: _____

Results of Emotional, Mental and Physical Scores:

	Emotional (A)	Mental (B)	Physical (C)
Score			
Suggested Exercises / Treatments			

Exercise Name	Date	Time	Duration (Min)	Treatment for Emotional (E) / Mental (M) / Physica (P) (Please indicate the treatment using E, M or P)

Exercise Name	Date	Time	Duration (Min)	Treatment for Emotional (E) / Mental (M) / Physical (P) (Please indicate the treatment using E, M or P)

Exercises / Treatments

Please refer to the results above. If you are in (A), please perform the following exercises / treatments:

Exercise / Treatment (1): ***Exercise for connecting with your emotional side***

Aims:

To become connected to all your emotions and, by accepting the positive ones, make them stronger, and by accepting the negative ones, make them less frightening and less over powering.

What to do?

- Sit or lie down and place both hands on your navel. Listen in to yourself. What emotion can you detect? Is there only one particular emotion, or can you make out a number of different ones? Are your emotions mixed-that is, contradictory-for example happiness and fear, satisfaction and neediness? Or are they of the same kind, such as fear and loathing, happiness and contentment, loneliness and rejection?
- Identify each emotion separately. Let's say you discovered fear inside yourself. Notice where in your body the fear is located. Do you feel it in your head, in your stomach area or anywhere else? What happens to your breathing, while you feel the fear? Is there a change in your body temperature? Notice as much detail as you can.
- Acknowledge the fear by addressing it with the thought,' you are my fear. You are part of me and I resist you no longer.' Do the same with every single emotion.

How long does it take?

Take your time over this exercise. Don't rush it, but really listen in to yourself very carefully. The more feelings you can find and acknowledge, the more complete will be your inner picture of who you are. When you can find only positive emotions, you need not do this exercise again until you feel the need to do. If you have mostly negative emotions, do the exercise everyday.

How do I know I'm doing it right?

It is good sign when you can stay calm and accepting while thinking about a negative a negative emotion. Also, when you feel more appreciative and happy about positive ones, it tells you that you have gained from the exercise.

What to avoid?

Cheating. Please do not ignore negative emotions, just because you feel they should not be there. Not looking at them won't make them go away.

Exercise / Treatment (2): ***Exercise for healing negative emotions***

Aims:

To acknowledge and honour a negative feeling. It is there for a reason and has probably served as a useful self-preservation mechanism in the past. By conveying your respect for it, the negative feeling can abate. Trying to sweep a negative feeling under the carpet gives it power over you; facing it and acknowledging it gives you the power to deal with it.

What to do?

- Sit or lie down comfortably and place your hands on your navel. Close your eyes.
- Allow a negative emotion to come forward within you and name it by thinking 'This is my [anger/envy/].'
- Imagine you could take the emotion out of yourself and place it in front of you as a person. What would your personified emotion look like? Would it be a man or a woman? It is someone you know or someone you have never seen before?
- Watch the personified emotion express that feeling. Watch them rant and rave in anger, sit with head in hands with depression, or do whatever expresses the emotion they are representing.
- Address the person in your mind with the following words, 'you have a very special part in my life and I don't know what I'd do without you. You are very important to me.' Check how you feel.
- Now swap places and be the personified emotion. Feel the anger, depression or whatever else you are representing. Feel yourself acting and expressing that feeling physically, either through words or by your posture and body tension. Now hear the words that are addressed to you, 'you have a very special part in my life and I don't know what I'd do without you. You are very important to me.' Check how you feel as the personified emotion who hears these words.

- Swap places again and reintegrate the personified emotion back into you. See how it feels different now. Open your eyes again.

How long does it take?

Unimportant. Take your time.

How to know I'm doing it right?

At the end of the exercise you will feel more peaceful inside.

What to avoid?

Working with too many negative emotions in one go. Allow the effects of the exercise to percolate through your body and mind for a day and leave tackling the next emotion to the next day. Less is more.

Exercise / Treatment (3): ***The screen exercise***

Aims:

To help you gain a clearer perspective. To become more detached from a formerly distressing memory. To get a more neutral perspective on an issue that you feel confused or uncertain about.

What to do?

- Single out the memory or current situation you are struggling with, either because it makes you sad or embarrassed, or because you cannot stop thinking about it for any other reasons.
- Close your eyes and think the memory/situation through from start to finish, remembering as much detail as you can.
- Now imagine you could take the memory/situation out or your head and put it on to an inner screen so that you can watch the memory/situation like a film.
- Watch the goings on in the screen as an outside observer, and notice how you can see things differently.

How long does it take?

As long as you need to get a new perspective.

How do I know I'm doing it right?

When you feel better or clearer after having done the exercise.

Please refer to the results above. If you are in (B), please perform the following exercises / treatments:

Exercise / Treatment (4): ***Self-preservation reset exercise***

Aims:

To help resolve inner conflict and to become aware of the protective function of negative thoughtforms and achieve a more moderate version of the thought.

What to do?

- Make yourself comfortable and close your eyes.
- Get in touch with the inner self-preservation thought that makes you unhappy or prevents you from doing what you want to do.
- Imagine taking the thought out of your head and making it into a person who addresses you with those negative words.
- Decide what this person's good intention is. What are trying to protect you from?
- Thank the person in your mind and ask them to encourage you instead.
- Shake hands on the deal and then reintegrate your self-preservation part back into yourself.

How long does it take?

About five to ten minutes. It is fine if you need longer though.

How do I know I'm doing it right?

Before you do exercise, think about the thought that is making you unhappy. Do this whilst resting a hand on your navel. Check how your belly area feels. You will notice an unpleasant sensation, such as tingling or butterflies.

After the exercise, think the new, more moderate thought with a hand on your navel and check again how your belly reacts. You should now experience a pleasant or neutral sensation under your hand. If the feeling is still unpleasant, you need to repeat the exercise because you have not yet found the right replacement thought.

What to avoid?

Getting too hung up about seeing everything clearly in your mind. A vague sense of knowing what this inner thought looks like as a person is good enough.

Exercise / Treatment (5): ***Exercise for a happy ending***

Aims:

To stay focused on your aim and positive outcome. To stay motivated and optimistic.

What to do?

- Sit or lie down comfortably and close your eyes.
- Imagine standing in front of a full-length mirror and see your reflection in the mirror.
- As you are looking at your reflection, imagine a soft grey mist beginning to fill the mirror until it has obscured your reflection entirely.
- Take a deep breathe and step into the mirror. You are safe and secure as the soft grey mists carry you gently forward in time to that day when you have overcome the particular problem you are working on now.
- Imagine yourself being set down by the mists on that happy day and watch them clear around you. Notice in detail how your life is different now that you have overcome the problem. Feel all the happy feelings that go with having achieved your aim. Notice all the things you are able to do which you couldn't do before. Feel what it is like to do all these things now. Enjoy the elation. Stay in that feeling for a while.
- Now let the soft grey mists surround you again and carry you gently backwards in time, until you step backwards out of the mirror.
- Watch the mists clear from the mirror until you can see your own reflection again.
- Open your eyes again.

How long does it take?

Spin this one out, especially your happy feelings when you imagine you have achieved your aim. Do this exercise daily.

How do I know I'm doing it right?

A clear sign is when you feel uplifted at the end of the exercise.

Please refer to the results above. If you are in (C), please perform the following exercises / treatments:

Exercise / Treatment (6): ***Exercise for connecting with your physical side***

Aims:

To become aware of your body, to relax and to start appreciating that your thoughts, once channelled, can have an influence on your body. To start listening to the messages your body gives you and to spread positive messages through your body.

What to do?

- Loosen any tight clothing and lie down, legs stretches out, arms along your body. Put rolled up towels or a cushion under your head and behind knees, if that makes you feel more comfortable.
- Let your eyes close and listen to your breathing. Allow your breathing to go any way it wants to go and just listen to it. Feel how your chest and stomach area rise and fall gently with your breathing.
- Be aware any areas in your body that feel comfortable. Focus your inner attention on each of these comfortable areas in turn.
- Imagine spreading these comfortable feelings throughout your body.
- Now be aware of any areas in your body that are the right temperature-not too hot, not too cold. Focus on each of these areas in turn.
- Imagine spreading the comfortable temperature throughout your body.
- Now be aware of any areas in your body where you can feel a pulse beating. Focus on each of these areas in turn.
- Imagine feeling this life-giving pulse in every part of your body, in every muscle, gland, organ and fibre, and in every single cell of your body. Be aware that you are now feeling life force pulsing through you.

How long does it take?

Do each of these steps-comfortable feeling, right temperature and pulse-for as long as you can concentrate on it. When you feel your attention wandering off, move on to the next step. Initially you may find it hard to keep focused, so the exercise will be very short. As you practice more, your concentration will improve and the exercise will take a little longer, with clearer results.

How I know I'm doing it right?

When you feel calm and relaxed at the end, and particularly when you have been able to spread comfortable sensations around the body.

What to avoid?

Telling yourself off if you can't concentrate. Just move on to the next part of the exercise and focus your mind on the next sensation.

Exercise / Treatment (7): ***The psoas exercise***

Aims:

To help the body relax, to relax and release the tension in the psoas so it can become flexible again.

What to do:

- Lie down on your back, legs pulled up and hip-width apart. Rest your hands on your abdomen or next to your body. If you find it more comfortable, you can let your knees rest against one another.
- Gently massage the two points which are situated one inch above and beside the navel for about ten seconds. These are the neurolymphatic points relating to the psoas muscle. By massaging these points gently, you help the lymph relating to the kidney meridian move around the body.
- Close your eyes and the lie still. Concentrate on your spine in your lower back and imagine the psoas muscle fastened to each side of the lower spine and extending to the top of your legs. Picture the psoas lengthening and smoothing out and sinking down on to the floor or bed beneath you.

How long does it take?

Then minute twice daily, on walking up and before going to sleep. Also a good exercise if you cannot sleep.

How do I know I'm doing it right?

You will either find you are taking spontaneous deep breaths in when your psoas is beginning to relax, or you feel tension drifting out of your lower back.

What to avoid

Pressing your back down purposely. Allow the psoas to let go of tension in its own time.

Exercise / Treatment (8): ***Exercise for healing the body***

Aims:

To release tension from the body. To raise energy levels and make you more stress-resilient.

What to do?

- Loosen tight clothing. Sit or lie down and close your eyes.
- Listen to your breathing and feel the movement of your body as it expands and deflates with your breathing.
- Imagine that any physical tension now starts draining out of your body via your fingertips and your toes.
- Concentrate on the centre of your body.
- While you concentrate, imagine a sun being located at the centre of your stomach area, radiating warmth and strength outwards into the upper body, arms and head and into the lower body, legs and feet.
- Now imagine sparkling particles like fireworks spreading among the pathways that the rays of sunshine are making through the body, filling very muscle and fibre and cell with energy.
- If you know that there is a problem with a particular organ or gland, shift the sun over to that area so that this organ is receiving the full impact of the warmth, strength and energy of the sun and the sparkling particles. Hold this image as long as you can.

How long does it take?

Spin this exercise out as long as you can to get maximum benefit from it. Repeat it regularly, especially if you suffer from an illness or if you feel emotionally vulnerable.

How do I know I'm doing it right?

You feel calmer and physically more relaxed and refreshed. You may even fall asleep, so this is a particularly good exercise to do when you are having problems getting to sleep.

What to avoid?

Rushing through the exercise.

Please refer to the results above. If you are in (A) and (B), please perform the following exercises / treatments:

Exercise / Treatment (9): ***Collarbone breathing exercise***

Aims:

Helps to calm and relax you mentally and emotionally.

What to do?

1. Rest three fingers of your right hand in the hollow underneath the right collarbone while you breathe as follows:
    1. Take a deep breath in
    2. Breathe half way out
    3. Breath all the way out
    4. Breathe normally for one breathe cycle

There is no need to hold your breath at any stage. You can do this sequence quite quickly. One cycle only takes a couple of seconds.

2. Rest three fingers of your right hand in the hollow underneath the left collarbone and breathe as before.
3. Rest three fingers of your left hand on the hollow underneath the left collarbone and breathe as before.
4. Place three fingers of your left hand in the hollow underneath the right collarbone and rest the fingers there. Breathe as before.

Repeat this steps another four times.

How long does it take?

Do this exercise whenever you feel stressed and also before doing the meridian tap. Once you know the sequence by heart it should not take you more than three minutes to do it.

How do I know I'm doing it right?

You will feel calmer and more focused when you have finished the exercise.

What to avoid?

Getting too hung up about where exactly the points are. As you are using three fingers, one of them is bound to be in the right place.

Exercise / Treatment (10): ***Swapping places exercise***

Aims:

To help you gain a different perspective.

What to do?

- Close your eyes and think of the situation that makes you feel uncomfortable. Think about it in as much detail as you can.
- Imagine yourself moving through this situation as you would in reality, and explore how you feel.
- Now run through the same situation, but step into the other person's shoes. As you are now moving around, acting and reacting, how do you feel as the other person? why are acting and reacting the way you do? How are you feeling about yourself? How are you feeling about that person you are looking at (namely, you)? Check carefully whether you are trying to impress them, impress others around you or whether you are masking an inner insecurity with your behaviour.
- Swap places again and be yourself once more. Now that you have experienced the other person's feelings, how does that change how you feel? How is this changing your perception of the situation?

How I know I'm doing it right?

You should feel you have learnt something after the exercise, and that insight will help you adopt a more positive approach to the situation.

Please refer to the results above. If you are in (A) and (C), please perform the following exercises / treatments:

Exercise / Treatment (11): ***Zip up exercise***

Aims:

To switch on the Central Vessel (CV) that governs the brain. This will help the brain to work more easily and efficiently. This is important because the brain is the control centre for all physical and emotional functions.

What to do?

- Stand up and place both hands, one on the top of the other, over the area of your public bone.

- Run both hands, one of the top of the other, up the midline of your body and neck. Trade its path up to the chin below the lower lip. Stop here.
- Take your hands out to the side, arms stretched away from the body, then let them gently drop down to your side.
- Repeat ten times.

How long does it take?

Approximately one minute. A good time to do this exercise is first thing in the morning.

How do I know I'm doing it right?

You feel your breathing getting deeper and you feel more together. Ideal when you are stressed or anxious.

Exercise / Treatment (12): ***Stress tap exercise***

Aims:

To allow the body to let go of stress. To be able to think more clearly and feel more 'together' again. Sometimes, it can also be useful to balance out any lop-sidedness that may arise through doing a lot of intellectual work or through being very emotional. If you are stressed by over-thinking or over-feeling, one side of your brain becomes overworked.

What to do?

Tap firmly, between five and ten times, on the following points.

- Eyebrows (at the point closest to the nose)
- Under eyes.
- Under arms.
- Collarbones.
- Side of one hand.

How long does it take?

Do three rounds of tapping, then check whether you feel better and more relaxed. If not, do another three rounds of the same tapping sequence.

Exercise / Treatment (13): *Cross crawl exercise*

Aims:

To reduce emotional and physical stress. To enhance coordination. To feel more focused and energized.

What to do?

- March on the spot with exaggerated knee and arm movements.
- Swing your right arm far forwards while stretching the right leg backwards, then push the left arm forwards with the left leg going backwards.
- Raise your right knee up and touch it with your left elbow. Raise your left knee up and touch it with your right elbow.
- Raise your left arm in the air and stretch your right leg sideways away from the body. raise your right arm up in the air and stretch your left leg sideways away from the body.
- Raise your left arm in the air and stretch out your left leg sideways. Raise your right arm in the air and stretch your right leg sideways away from the body.

How long doest it take?

Do each cross crawl sequence twenty times.

Please refer to the results above. If you are in (A), (B) and (C) please perform the following exercises / treatments:

Exercise / Treatment (14): ***Exercise for soothing the body and the mind***

Aims:

Help to relax the body, mind and emotions.

What to do?

- Rest both your middle fingers on the bridge of your nose, one finger next to the other.
- Open your eyes wide, looking very slightly upwards. Make sure you do not furrow your brow, though.
- Slowly and gently move your middle fingers up and then outwards towards you temples, all the way down to your ears. Glide your fingers over the skin surface. Do not press. Make sure you breathe while doing the exercise.
- Repeat this ten times.

- Now close your eyes and repeat the same finger movements across your forehead and down to your ears another ten times.

How long does it take?

Take your time. Do this slowly.

How do I know I'm doing it right?

You will feel your forehead relax, together with your jaw muscles. You may also notice that you are breathing more deeply during or after the exercise. A yawn is also a good sign.

Exercise / Treatment (15): ***Meridian tap exercise***

Aims:

To disengage old emotions from the memory of a past event. To lessen anxiety levels.

What to do?

First of all, look at the following scale:

10. Distraught and beside yourself; severely depressed; unable to function.
9. Distraught and only just about able to function in everyday life.
8. Very upset and crying a lot, feeling devastated.
7. Very upset, crying occasionally, no longer feeling yourself.
6. Upset and unhappy, but still yourself.
5. Unhappy.
4. Sad.
3. Able to think about an event and only feeling vaguely sad.
2. Okay.
1. Feeling over it.
0. No particular feelings any more when thinking about the trauma.

Now close your eyes and think about the traumatic or anxiety-inducing event. Right now, whereabouts on the scale is your upset when you think about it? Make a note of the rating. Now we come to the actual tapping sequence. It is essential that you think about the trauma while you tap the points. Better still, speak the thought out loud while you tap. Rachel, for example, said 'Ian left me' while she tapped.

Use both hands and tap each point between five and ten times. You can do so rapidly. Think a short sentence referring to your problem or say it out loud while you tap.

1. Find the sore spot on the left side of your chest. Repeat your short sentence three times while you are rubbing the sore spot. Now, whilst saying/thinking the sentence:
2. Tap the inside of your eyebrows.
3. Tap under your eyes.
4. Tap under your nose.
5. Tap under your lower lip.
6. Tap under your arms.
7. Tap your collarbones.
8. Tap the side of your hand (one hand is sufficient).
9. tap the top of your hand (one hand is sufficient) and do the following:
    - Close your eyes.
    - Open your eyes.
    - Hum a few bars of a tune out loud.
    - Count 1-2-3-4-5 out loud.
    - Hum a few bars of a tune out loud.
10. Repeat steps 2 to 8.

Now close your eyes and think your upsetting thought again. Where on the rating scale are you now? The rating should have come down now. Repeat the tappig sequence 1 to 9, then 2 to 8 again, if necessary several times, until the rating comes down to an acceptable level or, ideally, 0.

How long does it take?

About two or three minutes for a full round of tapping, which means tapping 1 to 9, then 2 to 8. Do this several times a day or whenever you start getting upset about the past event.

How do I know I'm doing it right?

Your rating will gradually come down and you will notice that you are feeling less and less upset when thinking about the past event.

User Manual

List of Figures

User manual

Login Page

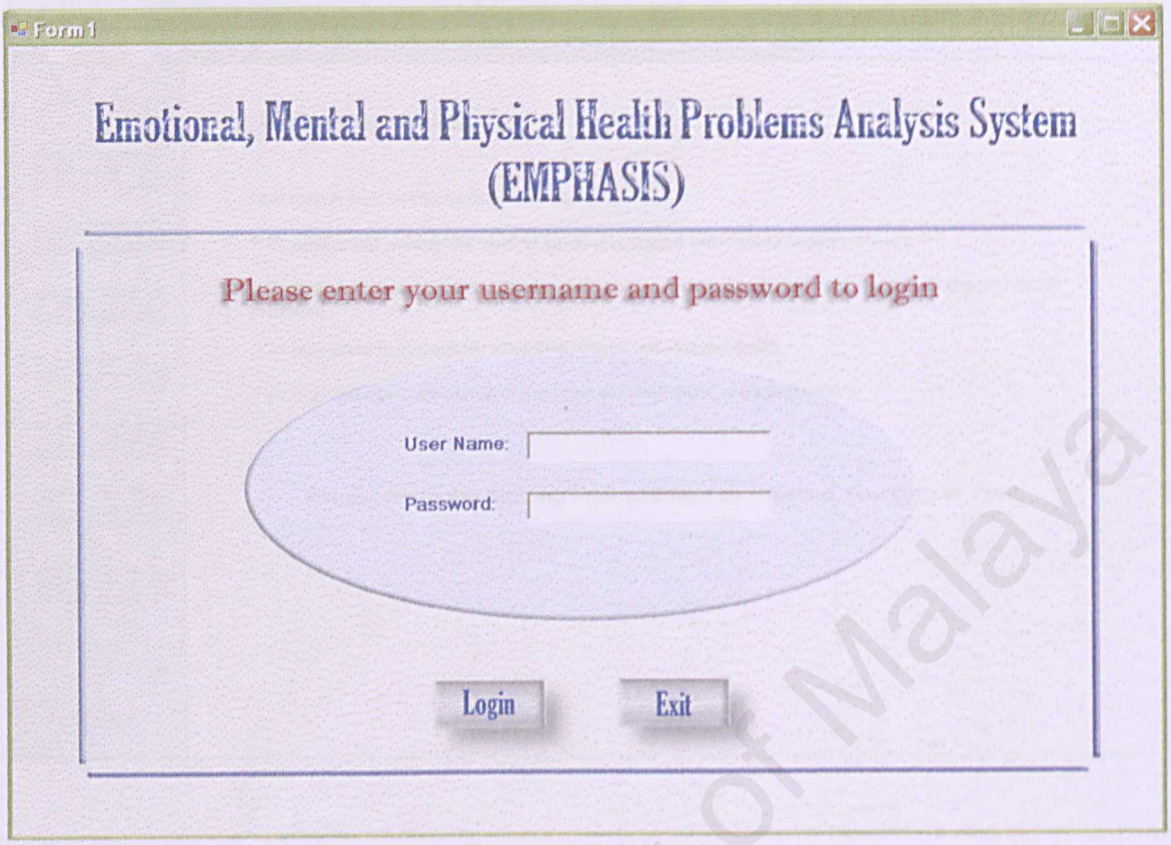

Figure 1.1: Login page

1. Emphasis can be accessed through open the .exe file or copy the .exe file into your computer.
2. Run the .exe. file, the system will go into the Login page.
3. Enter your login ID and password in the corresponding field. The login ID and the password are given.
4. Click 'Login' button.
5. If your login is successful, the system will direct you to the patient main page shown in Figure 1.2
6. Error message will be displayed if the login failed.

Main Page

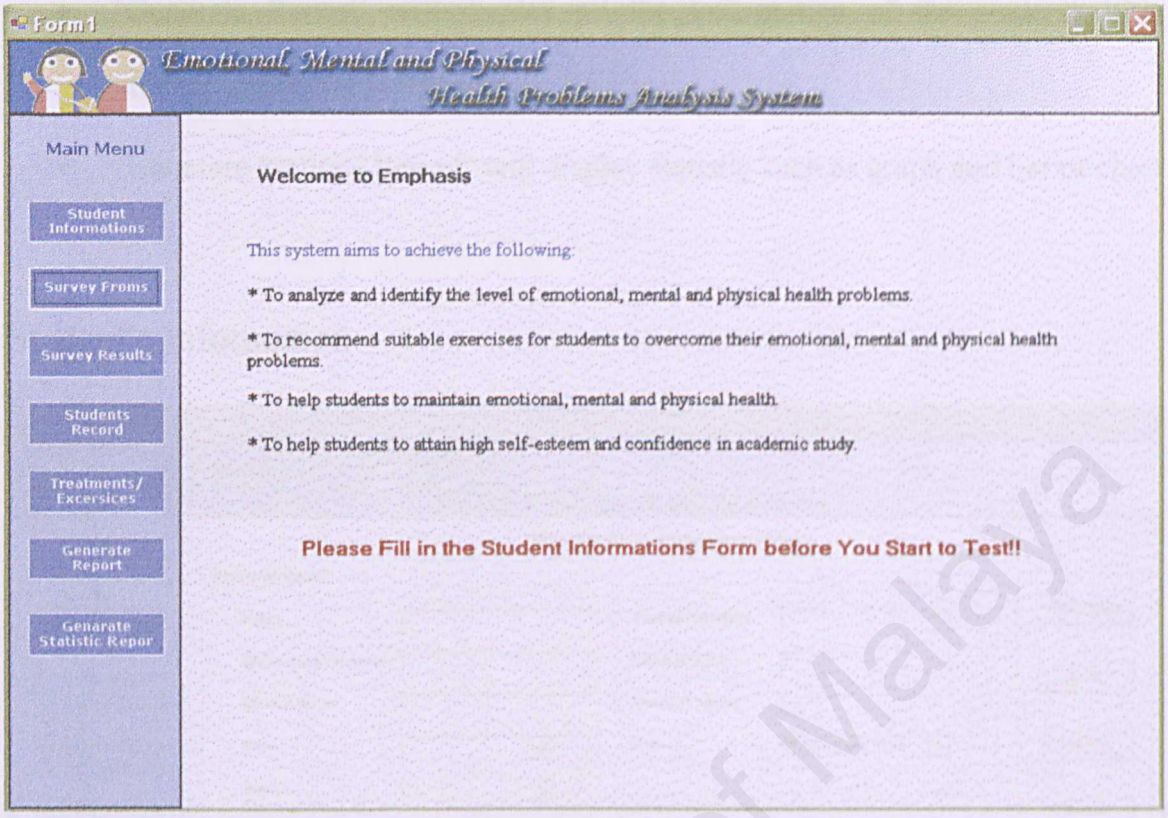

Figure 1.2: Main Page

1. In this page, user can view the main purpose of this system.
2. There are seven buttons which will link to others page.
3. The pages linked by the buttons are as below:
   - 'Student Information' displays the form for user to key in the personal details.
   - 'Survey Form' will give a list of survey questions to answer. User should select and click the link.
   - 'Survey result' will display the result based on your questions answer. The suitable treatment and exercise will be recommended.
   - 'Student Record' allow administrator to view the student record.
   - Treatments/Exercises' will list out all the treatment. Click the link to view the

next page.

- 'Generate Report' will display all the information of the students like the student's score and treatment.
- 'Generate Statistic Report' will display statistic such as graph and bar or chart.

Student's Information

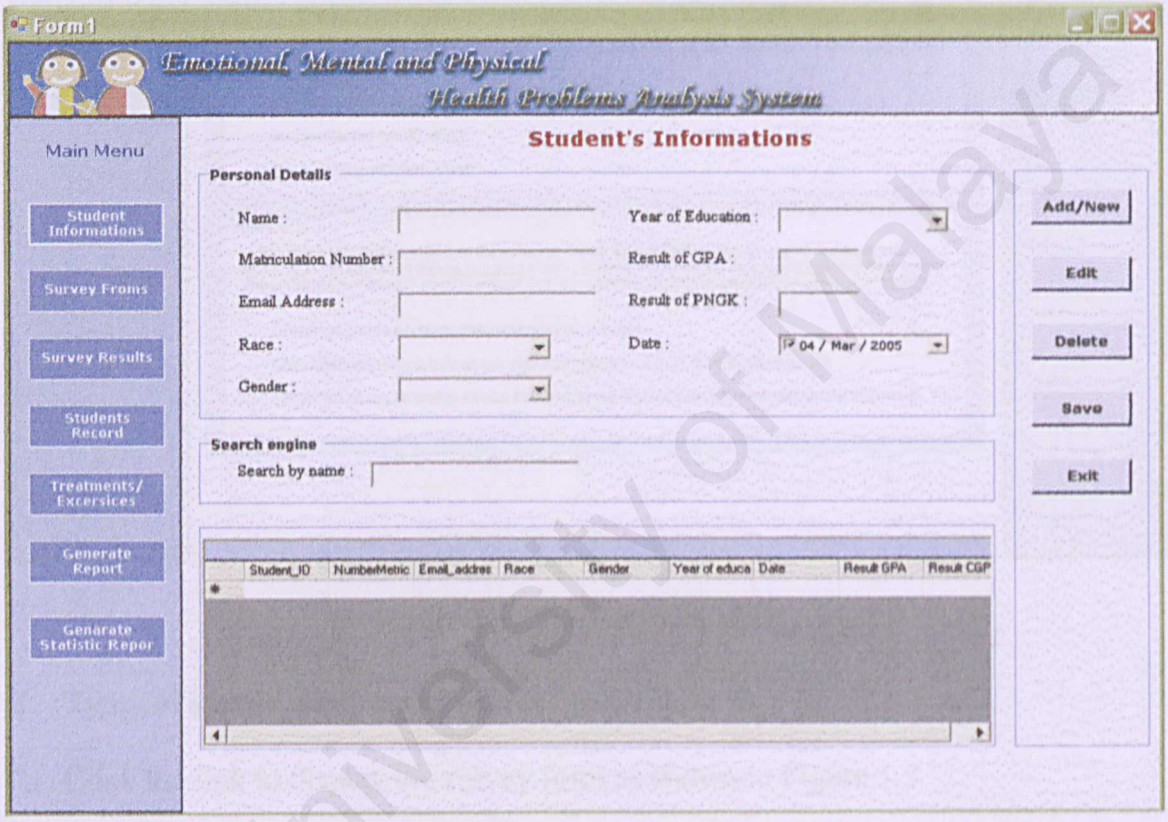

Figure 1.3: Student's Information Page

1. Fill in the corresponding fields. After completing the form, click the 'Save' button to save your record into your database.
2. The error message will be displayed if the fields are blank.
3. The datagrid shown in the page will display the entire key in records of the user. User also can search the name in the database.

4. User can add record or edit the record. The database will be updated.

Survey Form

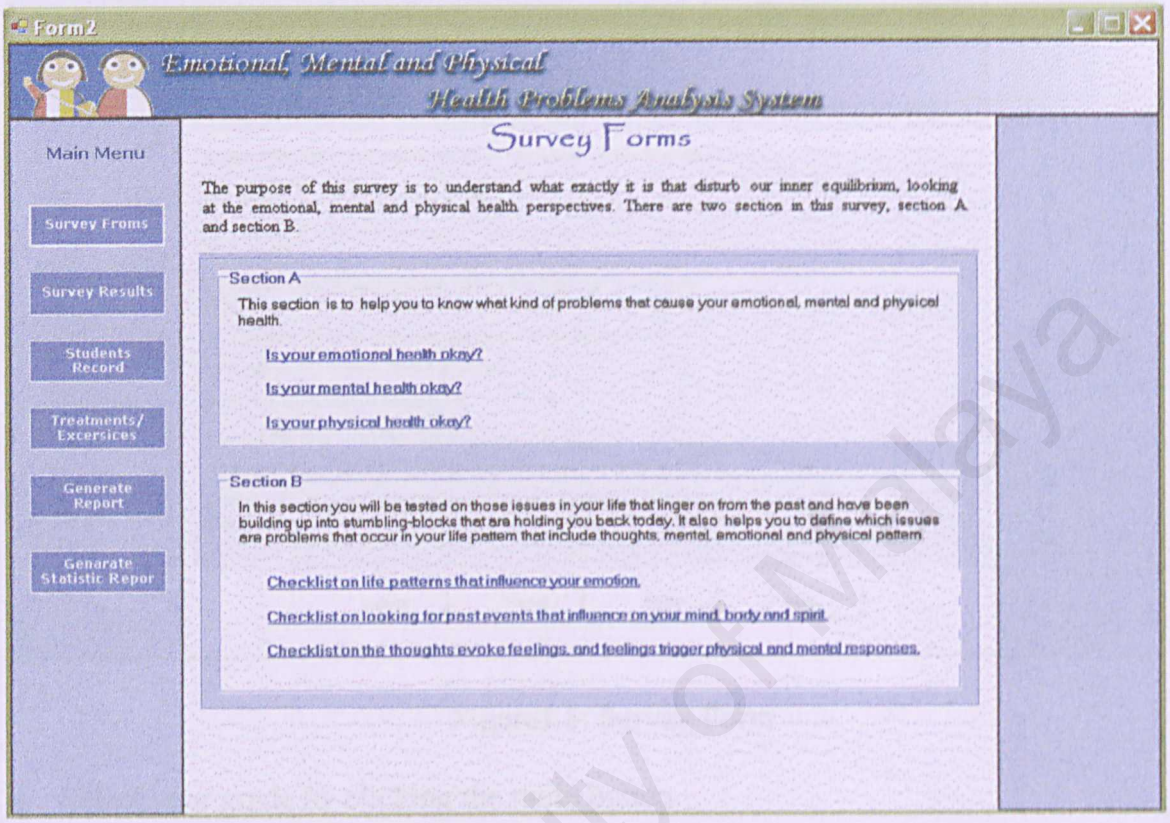

Figure 1.4: Survey Form Main Page

1. Types of survey questions are given.

2. Click the link to display the survey form as shown in Figure 1.5.

Survey Form

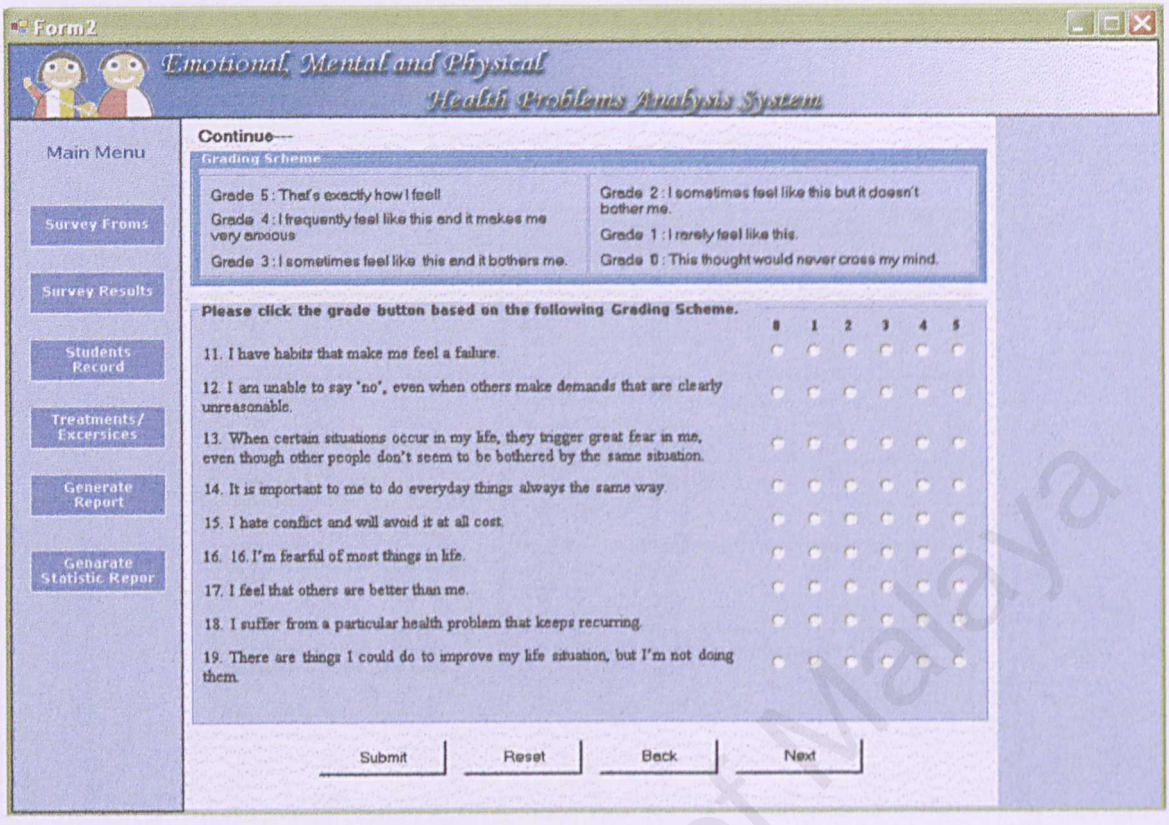

Figure1.5: Survey Form

1. Select your grade by clicking the radio button.
2. After completing the form, click 'Submit' button.
3. The database will be update. If the user submitted successful, the windows will display the result and provide some suitable treatments.
4. If the user fails to complete the form, error message will pop out.
5. Click 'Reset' button to open new form or clear the form.
6. Click 'Next' to open another survey page.

Treatments/Exercises

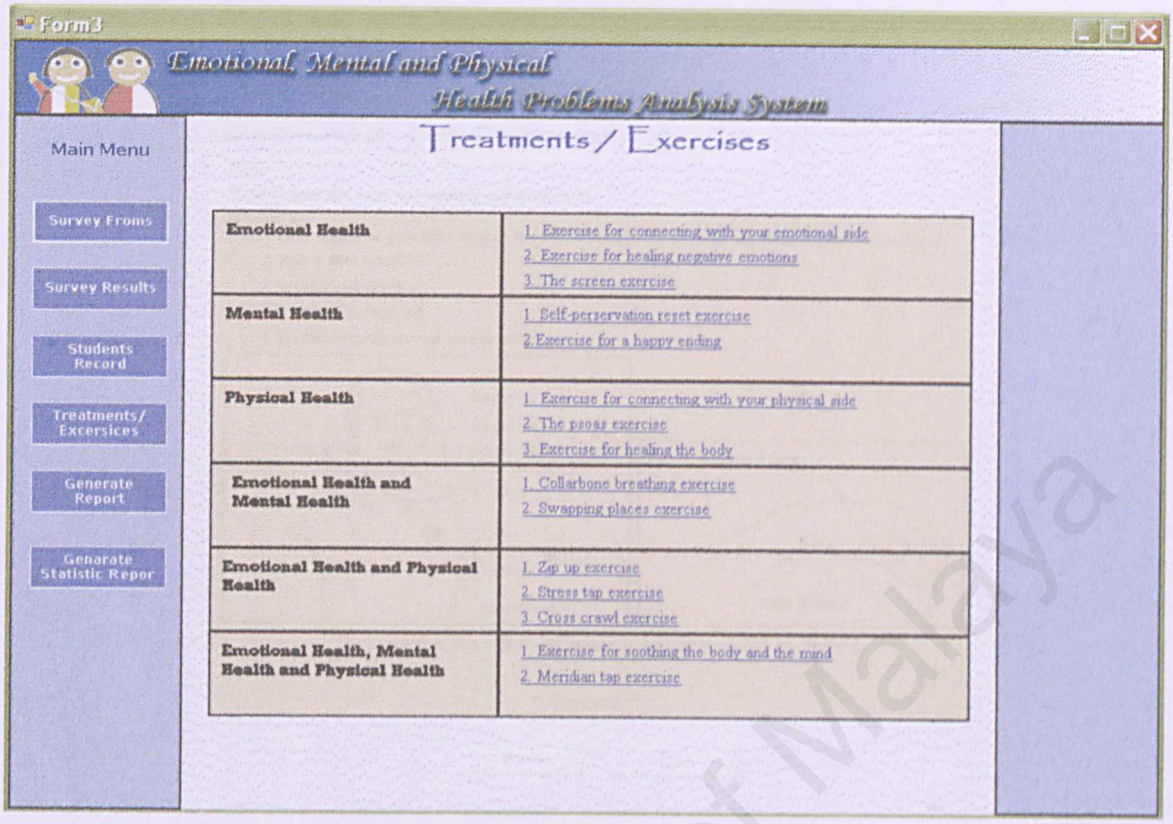

Figure 1.6: Treatments/Exercises main Page

1. Different types of treatments are shown.
2. User should choose a suitable exercise to do.
3. Click the link and will pop up the treatment page.

Treatments

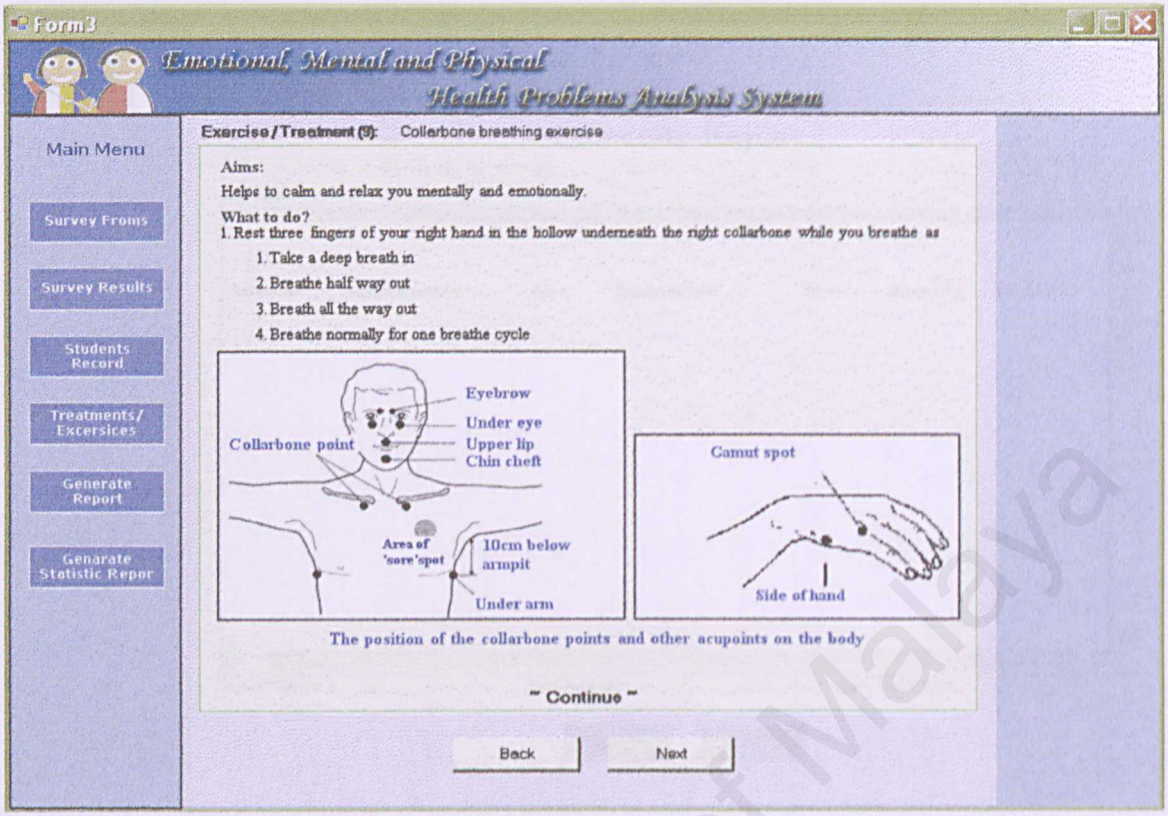

Figure 1.7: Treatments

1. Step by step statement will be given to let user easier to understand.
2. Each page will display different treatment with the aims, what you are going to do with this exercise, how to do, what if do the wrong steps or how much time are take to finish the exercises.

Generate Report

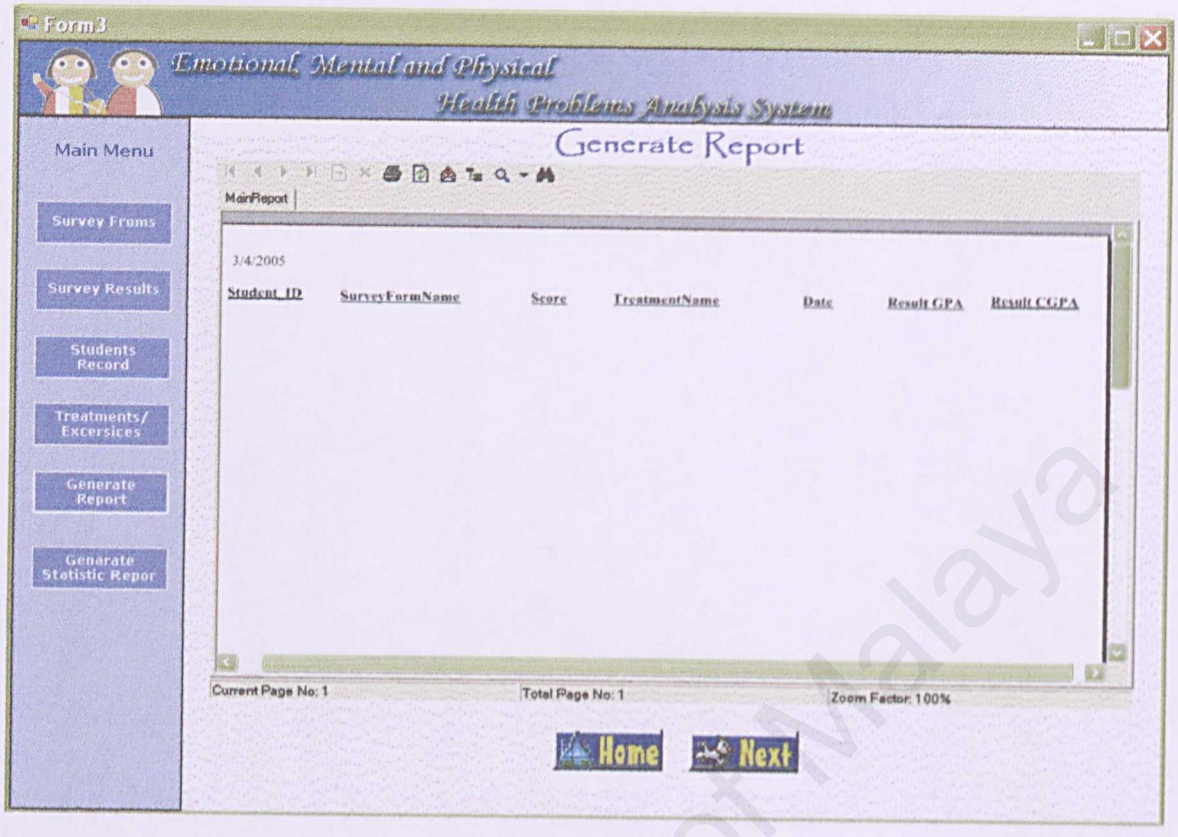

Figure 1.8: Generate Report

1. Window will display the entire student's data. It will generate the records of students; the score and suggested treatment are provided.
2. User can click icon printer at the top page to print the report.
3. User can click Refresh button to refresh the data.